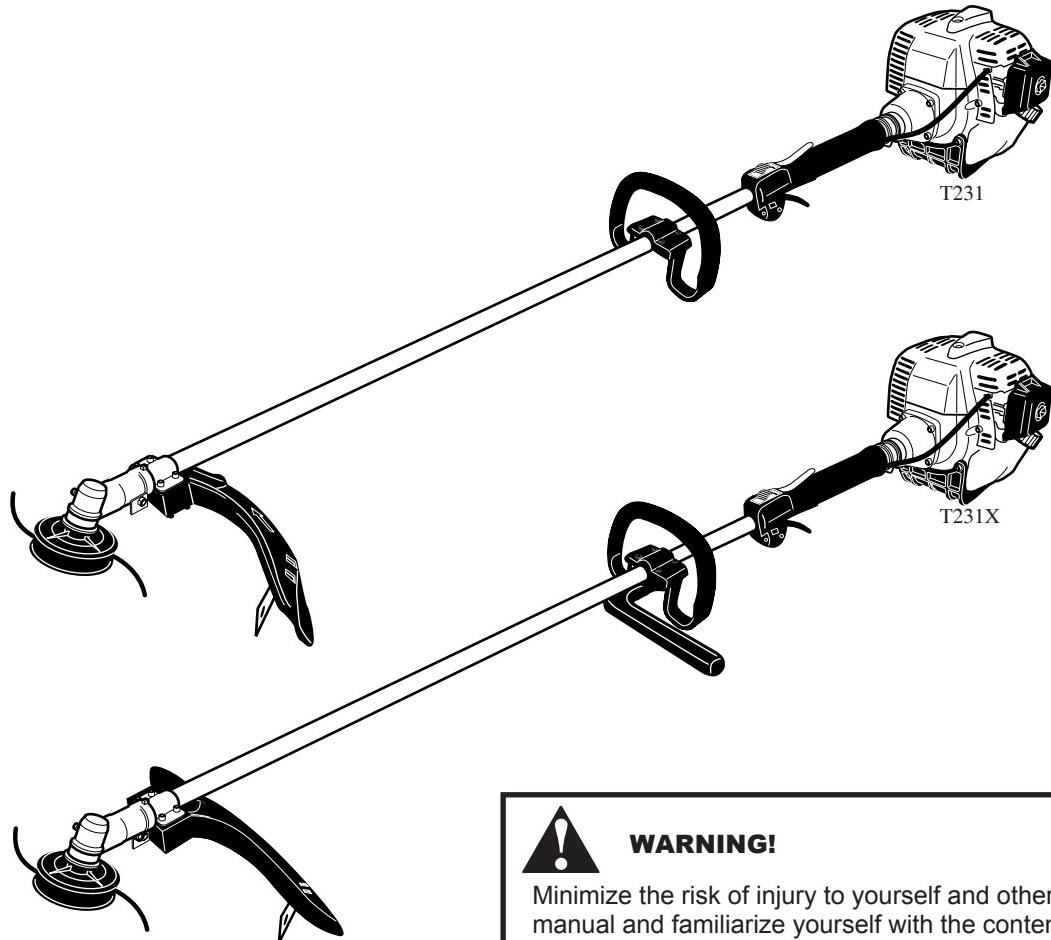


## **SHINDAIWA OWNER'S/OPERATOR'S MANUAL**

# **T231 TRIMMER T231X TRIMMER**



### **WARNING!**

Minimize the risk of injury to yourself and others! Read this manual and familiarize yourself with the contents. Always wear eye and hearing protection when operating this unit.

**shindaiwa**

Part Number 81642 Rev. 11/06

## Introduction

The Shindaiwa T231 Series hand held power equipment has been designed and built to deliver superior performance and reliability without compromise to quality, comfort, safety or durability.

Shindaiwa engines represent the leading edge of high-performance engine technology, delivering exceptionally high power with remarkably low displacement and weight. As an owner/operator, you'll soon discover for yourself why Shindaiwa is simply in a class by itself!

### IMPORTANT!

The information contained in this owner's/operator's manual describes units available at the time of publication.

Shindaiwa Inc. reserves the right to make changes to products without prior notice, and without obligation to make alterations to units previously manufactured.



### WARNING!

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

## Contents

	PAGE
Attention Statements .....	2
Safety Information.....	3
Safety Labels.....	4
Product Description.....	5
Specifications.....	5
Assembly and Adjustments.....	6
Engine Fuel.....	9
Starting the Engine.....	9
Stopping the Engine .....	10
Adjusting Engine Idle .....	10
Checking Unit Condition.....	11
Shoulder Strap.....	11
Cutting Grass with a Trimmer Head ...	11
Using a Blade (T231X) .....	12
Maintenance .....	13
Long Term Storage.....	15
Blade Sharpening .....	15
Troubleshooting Guide .....	16
Emission System Warranty.....	19

## Attention Statements

Throughout this manual are special "attention statements".



### WARNING!

A statement preceded by the triangular attention symbol and the word "WARNING" contains information that should be acted upon to prevent serious bodily injury.

### CAUTION!

A statement preceded by the word "CAUTION" contains information that should be acted upon to prevent mechanical damage.

### IMPORTANT!

A statement preceded by the word "IMPORTANT" is one that possesses special significance.

### NOTE:

A statement preceded by the word "NOTE" contains information that is handy to know and may make your job easier.



Read and follow this operators manual. Failure to do so could result in serious injury.



Wear eye and hearing protection at all times during the operation of this unit.



Keep bystanders at least 50 feet (15 m) away during operation.



Beware of thrown or ricocheted objects.



Do not operate this unit with a blade unless the unit is equipped with a Shindaiwa-approved handlebar or barrier.



Always wear a harness when operating this unit with a blade. A harness is also recommended when using trimmer line.



If unit is used as a brushcutter, beware of blade thrust. A jammed blade can cause the unit to jerk suddenly and may cause the operator to lose control of the unit.

### IMPORTANT!

The operational procedures described in this manual are intended to help you get the most from this unit as well as to protect you and others from harm. These procedures are guidelines for safe operation under most conditions, and are not intended to replace any safety rules and/or laws that may be in force in your area. If you have questions regarding your T231 series hand held power equipment, or if you do not understand something in this manual, your Shindaiwa dealer will be glad to assist you. You may also contact Shindaiwa, Inc. at the address printed on the back of this Manual.

## General Safety Instructions

### Work Safely

Shindaiwa trimmers operate at very high speeds and can do serious damage or injury if they are misused or abused. *Never allow a person without training or instruction to operate this unit!*



#### WARNING!

Never make unauthorized attachment installations. Do not use attachments not approved by Shindaiwa for use on this unit.

### Stay Alert

You must be physically and mentally fit to operate this unit safely.



#### WARNING!



Never operate power equipment of any kind if you are tired or if you are under the influence of alcohol, drugs, medication or any other substance that could affect your ability or judgement.



#### WARNING! Minimize the Risk of Fire

- **NEVER** smoke or light fires near the engine.
- **ALWAYS** stop the engine and allow it to cool before refueling. Avoid overfilling and wipe off any fuel that may have spilled.
- **ALWAYS** inspect the unit for fuel leaks before each use. During each refill, check that no fuel leaks from around the fuel cap and/or fuel tank. If fuel leaks are evident, stop using the unit immediately. Fuel leaks must be repaired before using the unit.
- **ALWAYS** move the unit to a place well away from a fuel storage area or other readily flammable materials before starting the engine.
- **NEVER** place flammable material close to the engine muffler.
- **NEVER** operate the engine without the spark arrester screen in place.

## The Properly Equipped Operator

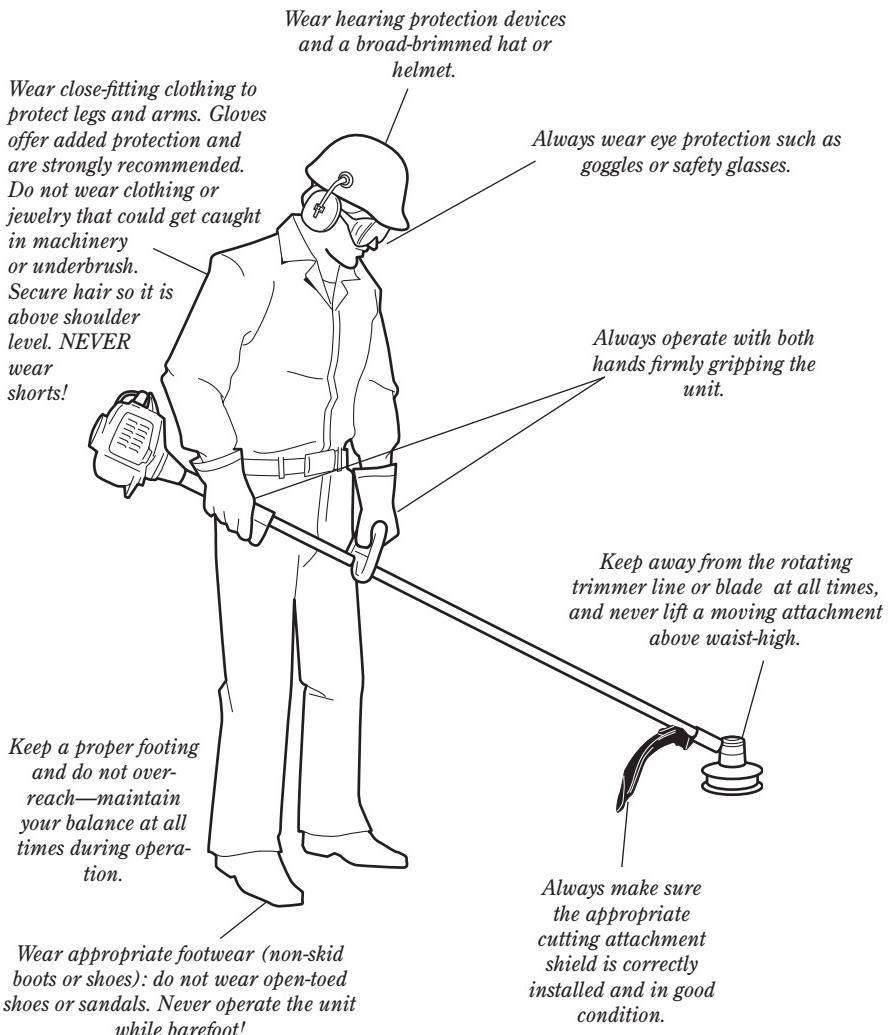


Figure 1



#### WARNING! Use Good Judgment

- **ALWAYS** wear eye protection to shield against thrown objects.
- **NEVER** operate the engine when transporting the unit.
- **NEVER** operate the engine indoors! Make sure there is always good ventilation. Fumes from engine exhaust can cause serious injury or death.
- **ALWAYS** clear your work area of trash or hidden debris that could be thrown back at you or toward a bystander.
- **ALWAYS** use the proper cutting tool for the job.
- **ALWAYS** stop the engine immediately if it suddenly begins to vibrate or shake. Inspect for broken, missing or improperly installed parts or attachments.
- **NEVER** extend trimming line beyond the length specified for your unit.
- **ALWAYS** keep the unit as clean as practical. Keep it free of loose vegetation, mud, etc.
- **ALWAYS** hold the unit firmly with both hands when cutting or trimming, and maintain control at all times.
- **ALWAYS** keep the handles clean.
- **ALWAYS** disconnect the spark plug wire before performing any maintenance work.
- **ALWAYS**, if a saw blade should bind fast in a cut, shut off the engine immediately. Push the branch or tree to ease the bind and free the blade.

## Be Aware of the Working Environment

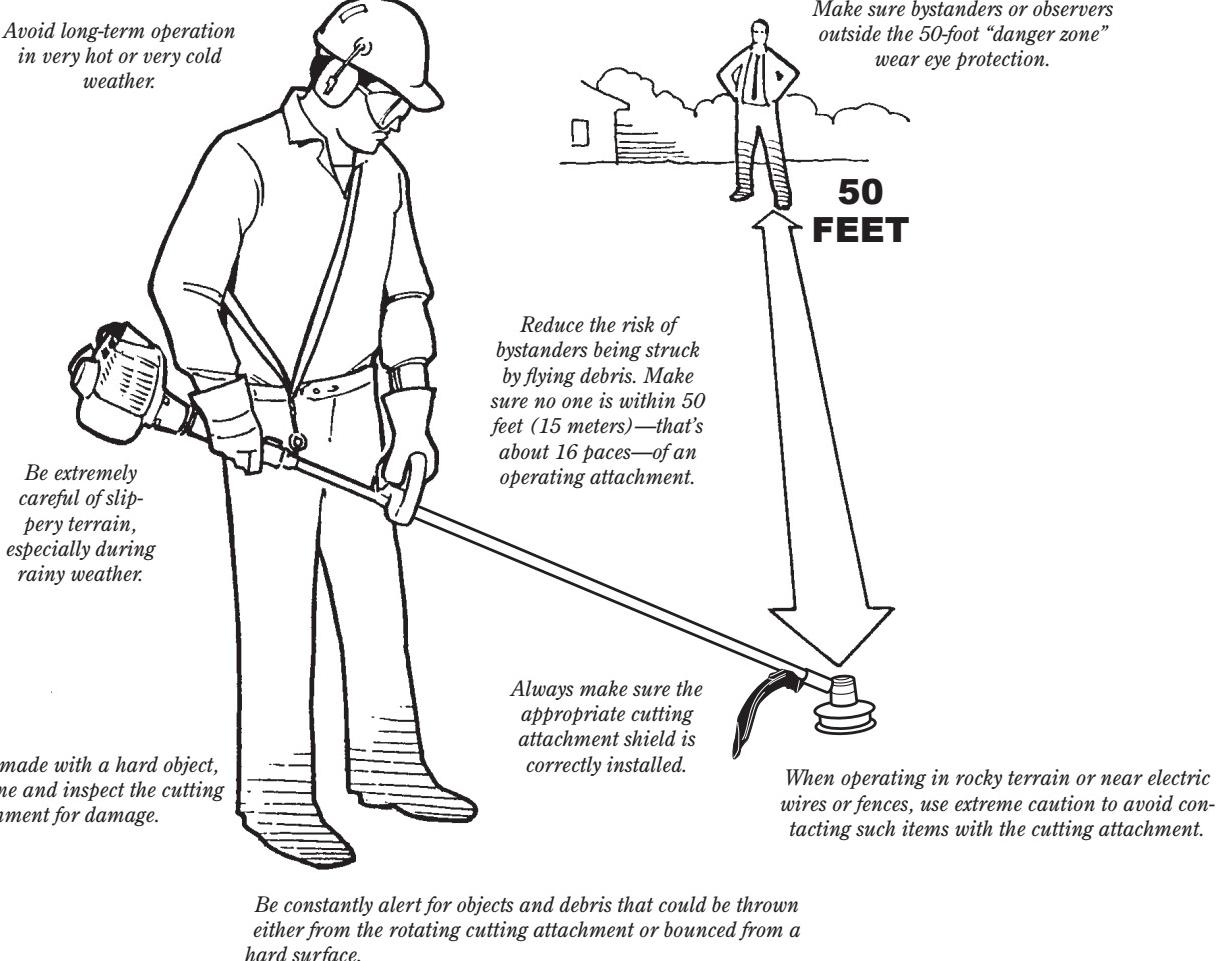


Figure 2

## Safety Labels

### IMPORTANT!

**Safety and Operation Information Labels:** Make sure all information labels are undamaged and readable. Immediately replace damaged or missing information labels. New labels are available from your local authorized Shindaiwa dealer.



This label indicates the minimum distance between front handle and rear grip per ANSI B175.3.

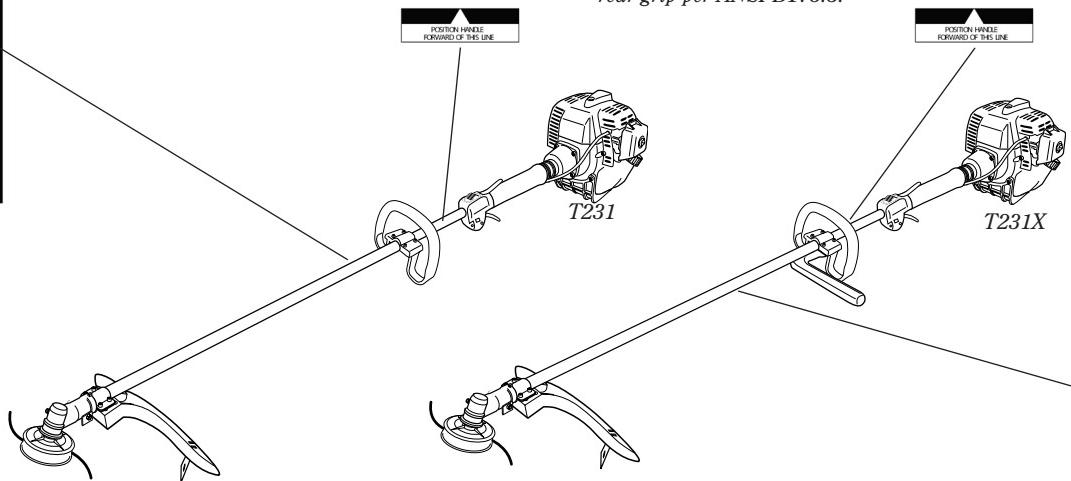


Figure 3

## Product Description

Using the accompanying illustrations as a guide, familiarize yourself with this unit and its various components. See Figure 4. Understanding your unit helps ensure top performance, long service life, and safer operation.



### WARNING!

Do not make unauthorized modifications or alterations to any of these units or their components.

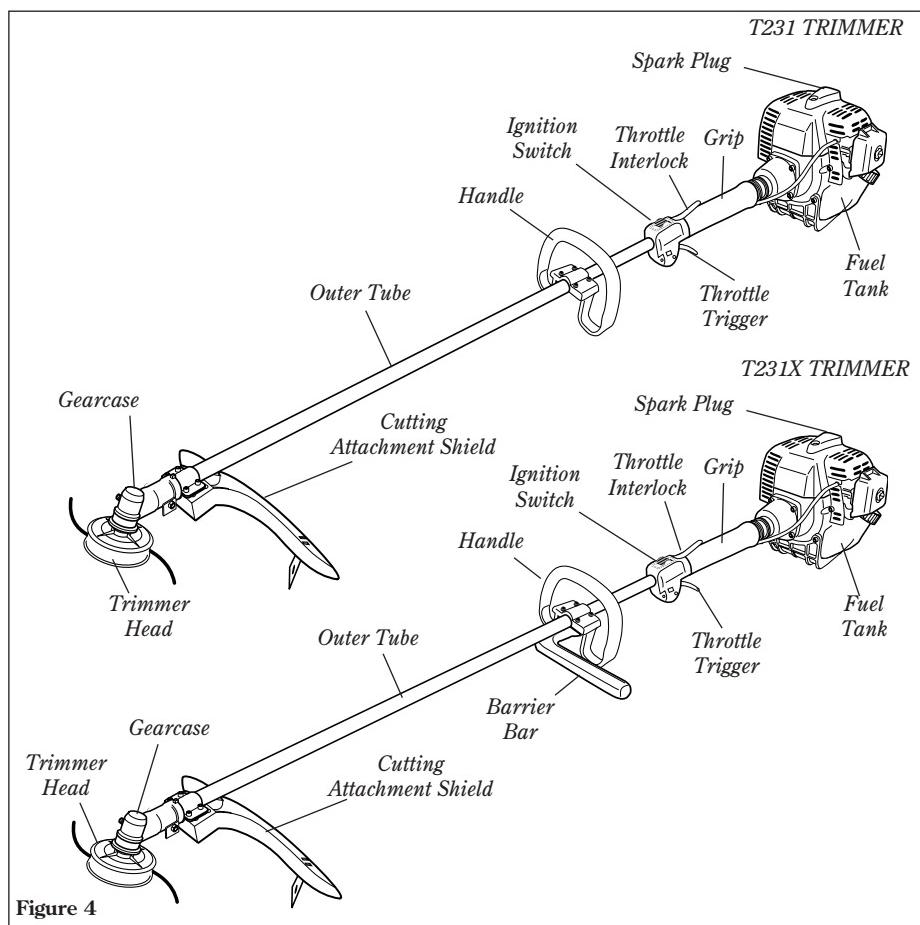


Figure 4

## Specifications

T231 dry weight (less attachments) .....	10.9 lb./4.9 kg
T231X dry weight (less attachments) .....	11.2 lb./5.1 kg
Engine model .....	Shindaiwa S230C
Engine type.....	2-cycle, catalyst, vertical-cylinder , air cooled
Bore x stroke .....	1.26x1.10 in./32x28 mm
Displacement.....	1.4 cu. in./22.5 cc
Maximum power .....	1.1 HP/0.8 kW @ 7500 rpm (min <sup>-1</sup> )
Fuel/oil ratio.....	50:1 with ISO-L-EGD or JASO FC class 2-cycle mixing oil*
Carburetor type.....	Walbro WYL-122, diaphragm-type
Fuel tank capacity .....	22.7 oz./670 ml
Ignition .....	One-piece electronic transistor-controlled

Spark plug .....	Champion CJ8
Air cleaner type .....	Non-reversible heavy-duty filter element
Starting method .....	Recoil
Stopping method.....	Slide switch
Transmission type....	Automatic, centrifugal clutch w/bevel gear
EPA Emission Compliance Period** .....	Category A

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\* ONE meets or exceeds these specifications and is recommended for all Shindaiwa products.

\*\* The EPA emission compliance referred to on the emission compliance label located on the engine, indicates the number of operating hours for which the engine has been shown to meet Federal emission requirements. Category C = 50 hours (Moderate), B = 125 hours (Intermediate) and A = 300 hours (Extended).

Specifications are subject to change without notice.

# Assembly and Adjustments

This unit comes fully assembled with the exception of the cutting attachment shield and cutting attachment.

## Prior to Assembly

Before assembling, make sure you have all the components required for a complete unit and inspect unit and components for any damage.

- Engine and shaft assembly
- Cutting attachment shield
- Cutting attachment
- Kit containing cutting attachment shield mounting bracket and hardware, this owner's/operator's manual and tool kit for routine maintenance. Tool kits vary by model and may include a hex wrench set, a spark plug/screwdriver combination wrench, and a spanner.

## IMPORTANT!

The terms "left", "left-hand", and "LH"; "right", "right-hand", and "RH"; "front" and "rear" refer to directions as viewed by the operator during normal operation.

## Handle

1. The handle is attached to the outer tube at the factory and positioned in an off-set position. See Figure 5.
2. Loosen the 4 socket-head cap screws on the handle and rotate the handle until the barrier bar is positioned horizontally on the left side of the unit. See Figure 6.
3. Position the handle forward of the Handle Positioning Label at the best position for operator comfort (usually about 10 inches ahead of the throttle housing).
4. Secure the handle by alternately tightening the four socket-head cap screws in a diagonal or "criss-cross" fashion.

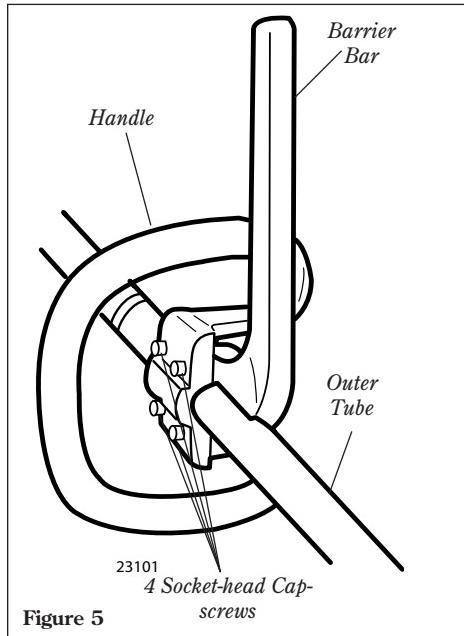


Figure 5

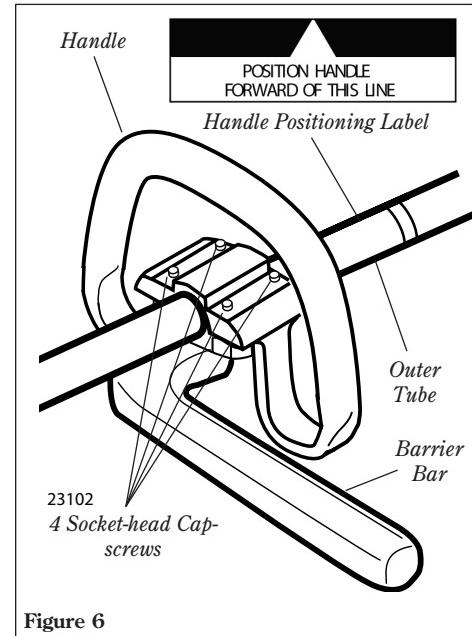


Figure 6

## Adjust Throttle Lever Free Play

The throttle lever free play should be approximately 3/16-1/4 inch(4-6 mm). See Figure 7. Make sure that the throttle lever operates smoothly without binding. If it becomes necessary to adjust the lever freeplay, follow the procedures and illustrations that follow.

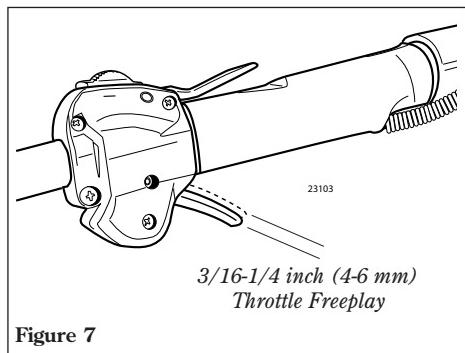


Figure 7

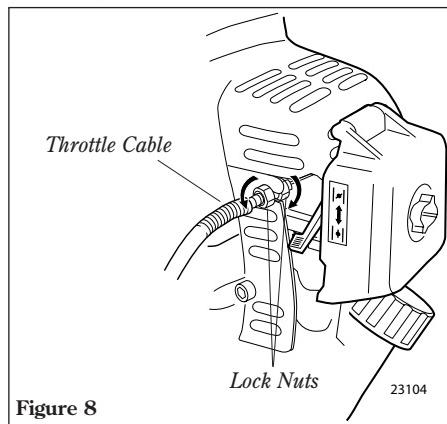


Figure 8

1. Loosen the throttle cable lock nuts and adjust in or out to achieve proper free play of 3/16-1/4 inch(4-6 mm). See Figure 8.
2. Retighten the locknuts.

## Assembly: Cutting Attachment Shield

### Install the Cutting Attachment Shield.

1. Insert the cutting attachment shield between the outer tube and the cutting attachment mounting plate. See Figure 9.

#### NOTE:

It may be necessary to loosen the retaining nut and clamp screw to adjust cutting attachment shield mounting plate.

2. Fit the two shims and the bracket over the outer tube and loosely install the four socket-head screws. See Figure 9.

#### CAUTION!

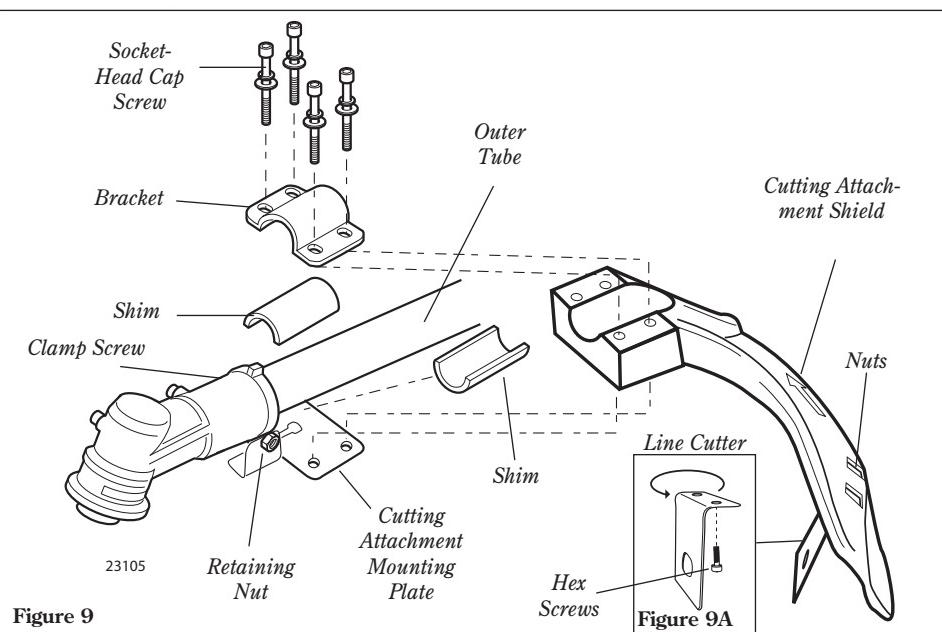
Make sure the clamp screw and retaining nut are securely tightened before tightening the four socket-head cap screws.

3. Tighten the four socket-head cap screws to secure the cutting attachment shield.



#### WARNING!

NEVER operate the unit without the cutting attachment shield installed and tightly secured!



### To Change Position of Line Cutter

The line cutter can be positioned in 2 positions to obtain different line length for cutting.



#### WARNING!

The line cutter is very sharp. Wear gloves to protect your hands when handling.

1. Remove the 2 hex screws with a 4mm hex wrench. See Figure 9A.

#### NOTE:

Be careful to not lose the 2 nuts in the cutting attachment shield, they are not captured.

2. Rotate line cutter. See Figure 9A.
3. Reinstall the two hex screws and tighten them securely.

## Assembly: Trimmer Head

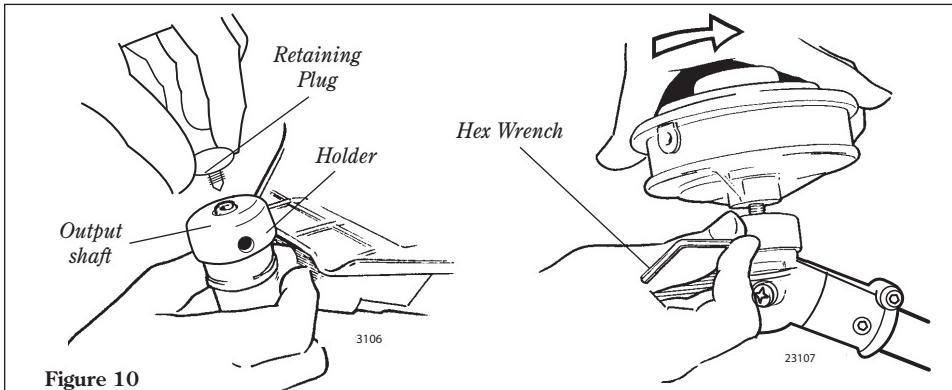
### Install the Trimmer Head.

1. Turn the trimmer over so that the gearcase output shaft faces UP.
2. Remove and discard the black plastic retaining plug from the output shaft. See Figure 10.
3. Rotate the holder until the hole in the holder aligns with the notch on the gearcase. Use the long end of the hex wrench to lock the holder and output shaft. See Figure 10.
4. While holding the hex wrench, thread the trimmer head onto the output shaft, turning counter-clockwise. Using hand pressure only, tighten the trimmer head firmly on the output shaft.

#### IMPORTANT!

The trimmer head has a left-hand thread. For removal turn the trimmer head clockwise.

5. Remove the hex wrench.
6. Adjust the trimmer line length to reach no further than the line cutter on the cutting attachment shield. Trim to the correct length if necessary.



#### WARNING!

A standard grass trimmer with a loop handle should NEVER be operated with blade-type attachments. For blade use the trimmer must be fitted with a bicycle-type handlebar or loop handle with a barrier bar that is located in front of the operator to reduce the risk of the operator coming in contact with the cutting attachment (per ANSI B175.3). When using a blade, the unit must also be equipped with a harness or strap.

To install a trimmer head onto a T231X, first remove the shaft bolt, bolt guard and safety clip (see the next page).

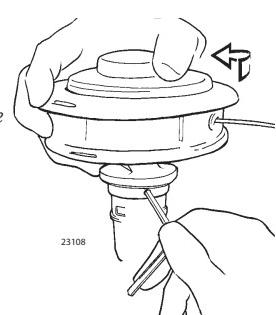


Figure 11

The unit should now be completely assembled and ready for use with a trimmer head.

# Assembly: Blade T231X

## Mount the Cutting Blade

Turn the T231X upside down so the gearcase output shaft is facing UP and remove the shaft bolt, bolt guard and holder B from the gearcase shaft.

1. Align the hole in blade holder A with the matching hole in the gearcase flange and then temporarily lock the output shaft by inserting a hex wrench through both holes. See Figure 12.
2. Slide the safety clip off-center. See Figure 13.
3. Fit the blade over the safety clip and then center it over the flange on holder A. See Figure 14.

### CAUTION!

Install the blade so its printed surface is visible to the operator when the brushcutter is in the normal operating position.



### WARNING!

The blade must fit flat against the holder flange. The blade mounting hole must be centered over the raised boss on blade holder A.

### NOTE:

When installing certain blades, it may be necessary to temporarily remove the safety clip.

4. Lock the blade in place by centering the safety clip on the output shaft. See Figure 14.



### WARNING!

Never operate the T231X without the safety clip in place!

### IMPORTANT!

The machined recess in holder B must completely surround the safety clip, and both holders must be flat against the surface of the blade.

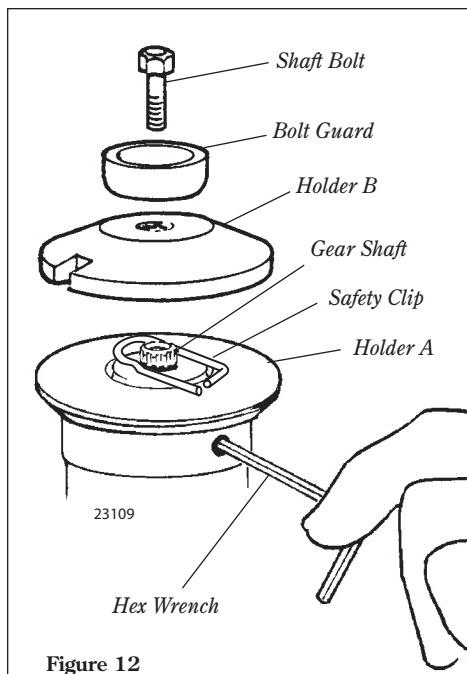


Figure 12



Figure 13

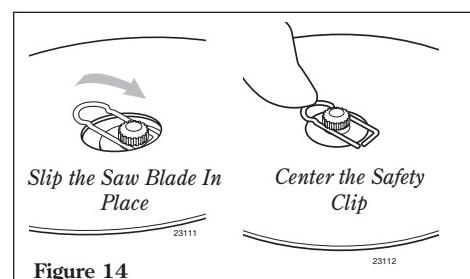


Figure 14

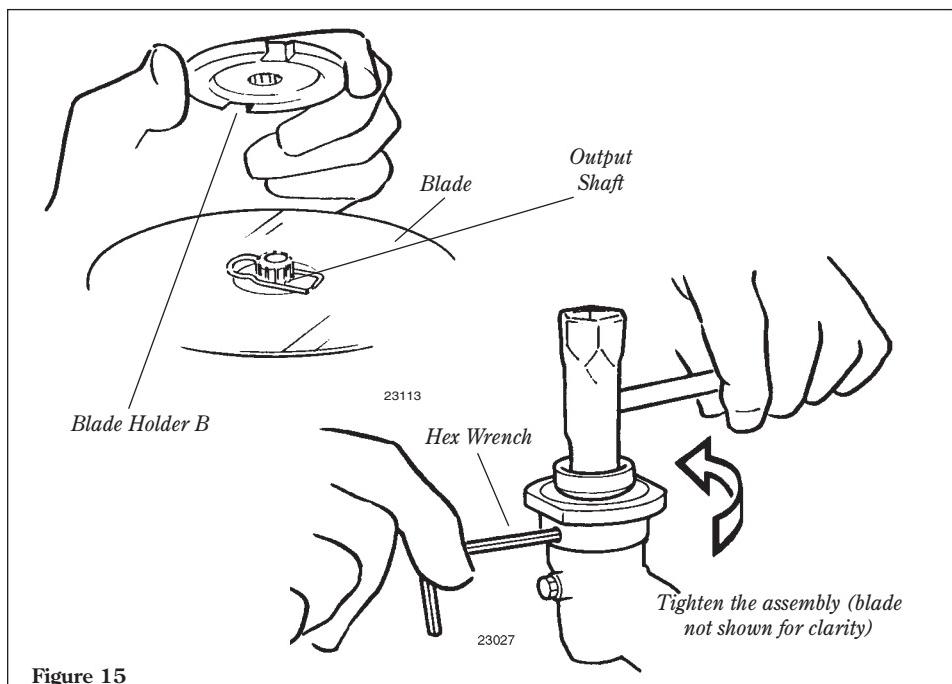


Figure 15

5. Install blade holder B on the output shaft. See Figure 15. The recess in the holder must completely cover the safety clip, and must fit tightly against the blade.
6. Install the bolt guard and then the blade retaining bolt. Using the combination spark plug wrench/screwdriver, tighten the bolt firmly in a counter-clockwise direction.
7. Remove the hex wrench.

**The T231X should now be completely assembled and ready for use with a blade.**

## Mixing Fuel

### CAUTION!

Some types of gasoline contain alcohol as an oxygenate. Oxygenated gasoline may cause increased operating temperatures. Under certain conditions, alcohol-based gasoline may also reduce the lubricating qualities of some 2-cycle mixing oils. Never use any type of gasoline containing more than 10% alcohol by volume! Generic oils and some outboard oils may not be intended for use in high-performance C4 engines, and should never be used in your Shindaiwa engine.

### CAUTION!

This engine is designed to operate on a 50:1 mixture consisting of unleaded gasoline and ISO-L-EGD or JASO FC class 2-cycle mixing oil only. Use of non-approved mixing oils can lead to excessive carbon deposits.

### IMPORTANT!

Mix only enough fuel for your immediate needs! If fuel must be stored longer than 30 days and **Shindaiwa ONE** oil with fuel stabilizer is not used, it should first be treated with a fuel stabilizer such as StaBil™.

**Shindaiwa**

**ONE** Oil is a registered JASO FC classified oil and also meets or exceeds ISO-L-EGD performance requirements. Shindaiwa One is recommended for use in all Shindaiwa low emissions engines. Shindaiwa one also includes a fuel stabilizer.

### Examples of 50:1 mixing quantities

- 1 gallon of gasoline to 2.6 oz. mixing oil
- 5 liters of gasoline to 100 ml. mixing oil

## Filling the Fuel Tank



### WARNING!

#### Minimize the risk of fire!

- ALWAYS stop the engine and allow to cool before refueling!
- Wipe all spilled fuel and move the engine at least 10 feet (3 meters) from the fueling point and source before starting!
- NEVER start or operate this unit if there is a fuel leak.

- NEVER start or operate this unit if the carburetor, fuel lines, fuel tank and/or fuel tank cap are damaged.
- NEVER smoke or light any fires near the engine or fuel source!
- NEVER place any flammable material near the engine muffler!
- NEVER operate the engine without the muffler and spark arrester in good working condition.

1. Place the trimmer on a flat, level surface.
2. Clear any dirt or other debris from around the fuel filler cap.
3. Remove the fuel cap, and fill the tank with clean, fresh fuel.
4. Reinstall the fuel filler cap and tighten firmly.

## Starting the Engine

### IMPORTANT!

Engine ignition is controlled by a two position switch mounted on the throttle housing labeled, "I" for ON or START and "O" for OFF or STOP.

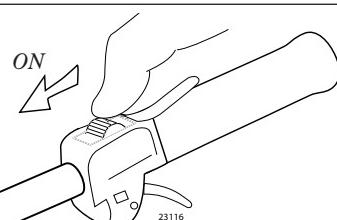
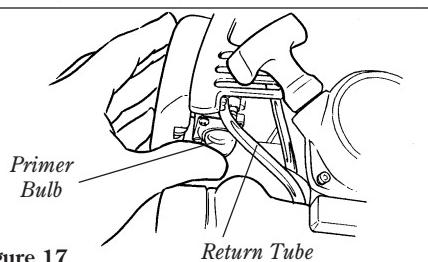


Figure 16

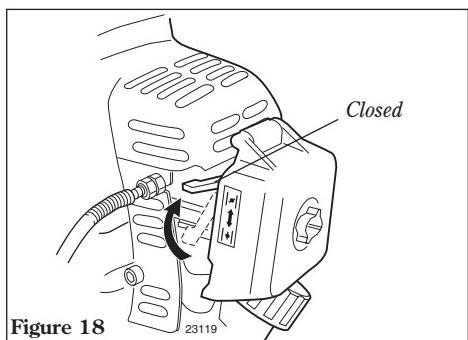
1. Slide the ignition switch to the "I" position (engine ON).



2. Press the primer bulb until fuel can be seen flowing in the transparent return tube.

### IMPORTANT!

The primer system only pushes fuel through the carburetor. Repeatedly pressing the primer bulb will not flood the engine with fuel.



3. Set the choke lever to the CLOSED position if engine is cold.

*Make sure the cutting attachment is clear of obstructions!*



Figure 19

4. While holding the outer tube firmly with left hand, use your other hand to slowly pull the recoil starter handle until resistance is felt, then pull quickly to start the engine.

### CAUTION!

Do not pull the recoil starter to the end of the rope travel. Pulling the recoil starter to the end of the rope travel can damage the starter.

## Starting the Engine (continued)



### WARNING!

The cutting attachment may rotate when the engine is started!

- When the engine starts, slowly move the choke lever to the "OPEN" position. See Figure 20. (If the engine stops after the initial start, close the choke and restart.)

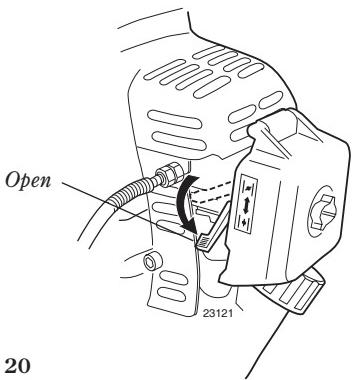


Figure 20



### WARNING!

Never start the engine from the operating position.

### IMPORTANT!

If the engine fails to start after several attempts with the choke in the closed position, the engine may be flooded with fuel. If flooding is suspected, move the choke lever to the open position and repeatedly pull the recoil starter to remove excess fuel and start the engine. If the engine still fails to start, refer to the troubleshooting section of this manual.

## When the Engine Starts

- After the engine starts, allow the engine to warm up at idle 2 or 3 minutes before operating the unit.
- After the engine is warm, pick up the unit and clip on the shoulder strap if so equipped. See page 11.
- Advancing the throttle makes the cutting attachment turn faster; releasing the throttle permits the attachment to stop turning. If the cutting attachment continues to rotate when the engine returns to idle, carburetor idle speed should be adjusted (see "Adjusting Engine Idle" below).

## Stopping the Engine

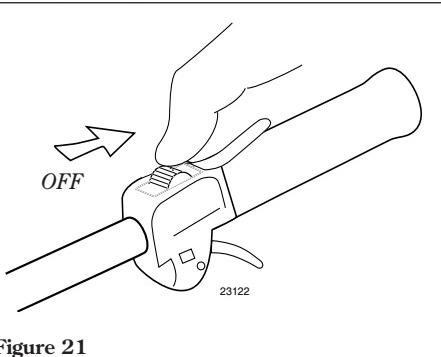


Figure 21

Idle the engine briefly before stopping (about 2 minutes), then slide the ignition switch to the "O" (Engine OFF) position.

## Adjusting Engine Idle

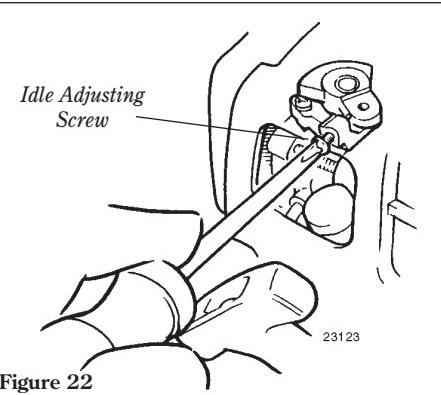


Figure 22

The engine must return to idle speed whenever the throttle lever is released. Idle speed is adjustable, and must be set low enough to permit the engine clutch to disengage the cutting attachment.

### Idle Speed Adjustment



### WARNING!

The cutting attachment must NEVER rotate at engine idle! If the idle speed cannot be adjusted by the procedure described here, return the trimmer to your Shindaiwa dealer for inspection.

- Place the trimmer on the ground, then start the engine, and allow it to idle 2-3 minutes until warm.
- If the attachment rotates when the engine is at idle, reduce the idle speed by turning the idle adjustment screw counter-clockwise. See Figure 22.
- If a tachometer is available, the engine idle speed should be final adjusted to 2,750 ( $\pm 250$ ) rpm ( $\text{min}^{-1}$ ).
- Carburetor fuel mixture adjustments are preset at factory and cannot be serviced in the field.

## Checking Unit Condition

Use only authorized Shindaiwa parts and accessories with your Shindaiwa trimmer. Do not make modifications to this unit without written approval from Shindaiwa, Inc.



### WARNING!

A cutting attachment shield or other protective device is no guarantee of protection against ricochet. YOU MUST ALWAYS GUARD AGAINST FLYING DEBRIS!

- **ALWAYS** make sure the cutting attachment is properly installed and firmly tightened before operation.
- **NEVER** use a cracked or warped cutting attachment: replace it with a serviceable one.
- **ALWAYS** make sure the cutting attachment fits properly into the appropriate attachment holder. If a properly installed attachment vibrates, replace the attachment with new one and re-check.
- **NEVER** stop the engine immediately and check for damage if you strike a foreign object or if the unit becomes tangled. Do not operate with broken or damaged equipment.
- **NEVER** allow the engine to run at high RPM without a load. Doing so could damage the engine.
- **NEVER** operate a unit with worn or damaged fasteners or attachment holders.
- **NEVER** operate the unit with the cutting attachment shield or other protective devices removed!

## Shoulder Strap

Adjust the shoulder strap so the shoulder pad rests comfortably on the off-side shoulder and the cutting path of the cutting attachment is parallel to the ground. Make sure all hooks and adjustment devices are secure.

### T231

#### NOTE:

Although a shoulder strap accessory is not required for use with a grass trimmer, a shoulder strap can increase operator comfort during extended periods of operation. See Figure 23.



Figure 23

## T231X - Operating With A Blade



### WARNING!

Always wear a shoulder strap when operating this unit with a blade. A shoulder strap is also recommended when using trimmer line.

#### NOTE:

Using a shoulder strap when operating this unit with a blade allows you to maintain proper control of the unit and reduces fatigue during extended operation.

## Cutting Grass—Units Equipped with a Trimmer Head

Your Shindaiwa unit may be equipped with one of several Shindaiwa trimmer head models, each with features for specific applications and/or operational requirements.

#### NOTE:

For proper operation, always refer to the instructions accompanying the trimmer head being used. Available trimmer head styles include:

- **Semi-automatic.** Trimmer line is indexed when the operator taps the trimmer head on the ground during operation.
- **Manual.** The operator indexes line manually with the grass trimmer stopped.
- **Fixed.** The operator must stop the unit and add new lengths of trimmer line manually.
- **Flail.** This device, designed for clearing weeds and light brush, features three nylon blades attached to the head by pivots.

#### NOTE:

Additional hardware may be required to mount the Fixed Line or the Flail type trimmer heads.

#### CAUTION!

Do not push the rotating line into trees, wire fences or any material that could tangle or break line ends.

#### Engine Operating Speeds

Operate the unit at full throttle while cutting grass.

#### CAUTION!

Operation of trimmer without a cutting attachment shield and using excessive line length can lead to premature clutch failure.

#### CAUTION!

Operation at low RPM can lead to premature clutch failure.

#### Trimming and Mowing Grass

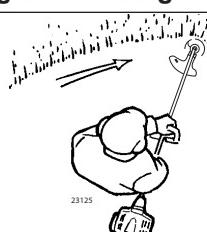


Figure 24

Hold the trimmer so the trimmer head is angled slightly into the area to be cut. To ensure maximum trimmer-line service life, cut only with the tip of the trimmer line.

Cut grass by swinging the trimmer from left to right. Keep the trimmer head horizontal. See Figure 24.

#### Edging

Tilt the handle about 100° to the left (from horizontal) and move forward, holding the trimmer vertically as shown in Figure 25.

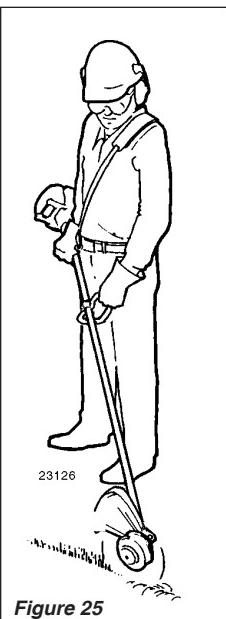


Figure 25

# Using a Blade T231X



## WARNING!

- Before working with a blade-equipped unit, always inspect and clean the area of objects that could interfere with or damage the blade.
- **Never** use a blade near sidewalks, fence posts, buildings or other objects that could cause injury or damage.
- **Never** use a blade for purposes other than those for which it was designed.
- Whenever you strike a hard object with a blade, always stop the brushcutter and carefully inspect the blade for damage. **NEVER OPERATE THE BRUSHCUTTER WITH A DAMAGED BLADE!**
- A blade-equipped unit must be equipped with a bicycle-type handlebar or barrier bar as well as a harness or shoulder strap.
- **Always** make sure the cutting attachment shield is properly installed before operating this unit.

## Blade Thrust

'Blade thrust' is a sudden sideways or backward motion of the brushcutter. Such motion may occur when the blade jams or catches on an object such as a sapling tree or tree stump. **BE CONSTANTLY ALERT FOR BLADE THRUST AND GUARD AGAINST ITS EFFECTS!**

## Brushcutter Handlebar

A brushcutter handlebar or barrier bar helps prevent the operator from moving forward, or the unit moving rearward, thus preventing inadvertent bodily contact with the blade. **ALWAYS KEEP THE HANDLEBAR OR BARRIER BAR SECURELY IN PLACE ON THE UNIT!**

## Brushcutter Shoulder Strap

A shoulder strap provides additional protection against blade thrust. In addition, a shoulder strap gives significant support and comfort to help ensure safe and efficient operation.

When operating a T231X with a blade, make sure both the handle and shoulder strap are adjusted to the size of the operator using the unit.

## Engine Operating Speeds

Operate the unit at full throttle while cutting. Best fuel efficiency is obtained by releasing the throttle when swinging back after a cut.

- To prevent possible engine damage, do not allow the brushcutter to run at high speeds without a load.
- Avoid operating the engine at low speeds. Doing so can lead to rapid clutch wear. In addition, slow-speed operation tends to cause grass and debris to wrap around the cutting head.



## WARNING!

When cutting wood with a saw, feed the blade slowly—never strike or "slam" a spinning blade against the wood.



## WARNING!

DO NOT use 2-tooth or non-Shindaiwa approved 4-tooth cutting blades with Shindaiwa trimmers and brushcutters.

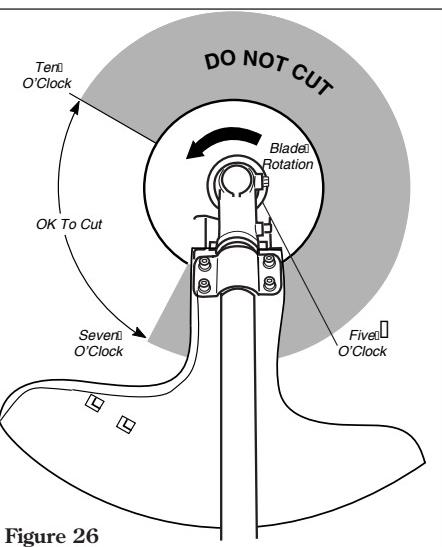


Figure 26

The blade rotates counter-clockwise. For best performance and to minimize being stuck by debris, move the blade from right to left while advancing on your work. Position the blade so cuts are made between the blade's 7 o'clock and 10 o'clock positions (as viewed from above). DO NOT cut between the 10 o'clock and 5 o'clock positions. See Figure 26.

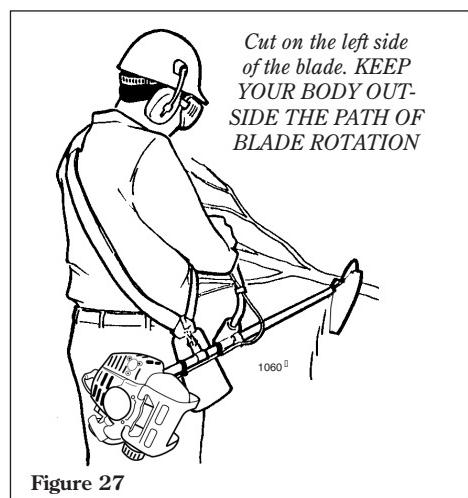


Figure 27

## Vertical Cuts

Hold the brushcutter with the blade at a 90° angle to the ground so the blade's bottom edge rotates toward the operator. Move the blade from top to bottom through the cut, and cut *only* with the bottom edge of the blade. See Figure 27.



## WARNING!

When making vertical cuts, never allow the blade to exceed waist height.

## General Maintenance

### IMPORTANT!

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY A DEALER OR SERVICE CENTER AUTHORIZED BY SHINDAIWA CORPORATION. THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF A WARRANTY CLAIM.



### WARNING!

Non-standard parts may not operate properly with your unit and may cause damage and lead to personal injury.

### NOTE:

Using non-standard replacement parts could invalidate your Shindaiwa warranty.



### WARNING!

Before performing any maintenance, repair or cleaning work on the unit, make sure the engine and cutting attachment are completely stopped. Disconnect the spark plug wire before performing service or maintenance work.

### Muffler

This unit must never be operated with a faulty or missing spark arrester or muffler. Make sure the muffler is well secured and in good condition. A worn or damaged muffler is a fire hazard and may also cause hearing loss.

### Spark Plug

Keep the spark plug and wire connections tight and clean.

### Fasteners

Make sure nuts, bolts, and screws (except carburetor adjusting screws) are tight.

### Blades

Keep blades sharp and check blade condition frequently. If a blade's performance changes suddenly, stop the engine and check the blade for cracks or other damage. Replace a damaged blade IMMEDIATELY!



### WARNING!

- Never repair a damaged blade by welding, straightening, or by modifying its shape. An altered blade may break during operation, resulting in serious personal injury.
- DO NOT use 2-tooth or NON-Shindaiwa approved 4-tooth cutting blades on Shindaiwa trimmers or brushcutters.
- Blades are **not** interchangeable between Shindaiwa edgers and trimmer/brushcutter models. Operating any unit with a blade or attachment not approved for that unit can be hazardous and may cause serious injury.

## Daily Maintenance

Prior to each work day, perform the following:

- Remove dirt or debris from the engine, check the cooling fins and air cleaner for clogging and clean them as necessary.

- Carefully remove any accumulation of dirt or debris from the muffler or the fuel tank. Dirt build-up in these areas could cause the engine overheating, induce premature wear, or create a fire hazard.

- Check for loose or missing screws or components. Make sure the cutting attachment is securely fastened.
- Check the entire unit for leaking fuel or grease.

## 10-Hour Maintenance

**Every 10 hours of operation** (more frequently in dusty or dirty conditions): Remove the air cleaner element. See Figure 28. Clean or replace as necessary. To clean element: wash it thoroughly in soap and water. Let it dry before reinstalling the element.

### CAUTION!

Do not operate the unit if the air cleaner or element is damaged, or if the element is wet.

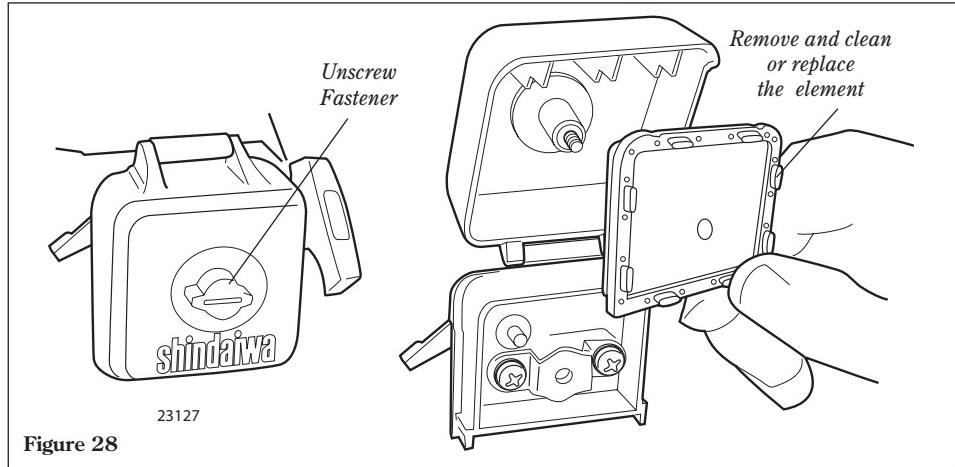


Figure 28

## 10/15-Hour Maintenance

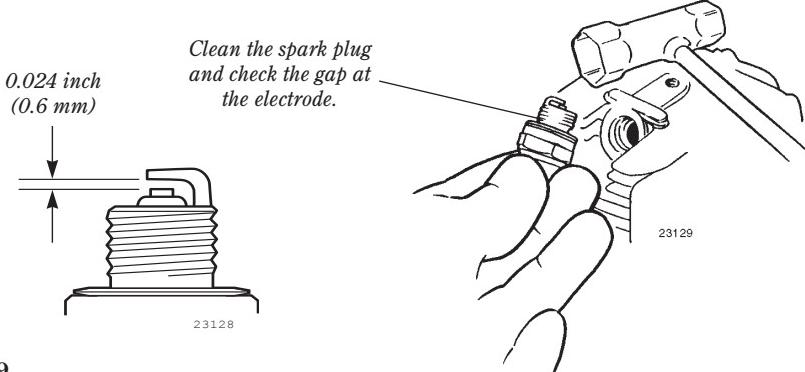


Figure 29

**Every 10 to 15 hours of operation:**  
Remove and clean the spark plug. Adjust the spark plug electrode gap to 0.024 inch (0.6 mm). If the spark plug must be replaced, use only an champion CJ8 or equivalent type spark plug of the correct heat range. See Figure 29.

### CAUTION!

Before removing the spark plug, clean the area around the plug to prevent dirt and debris from getting into the engine's internal parts.

## 50-Hour Maintenance

**Every 50 hours of operation**  
(more frequently in dusty or dirty conditions):

- Remove and clean the cylinder cover and clean grass and dirt from the cylinder fins.
- Remove the cutting attachment, cutting attachment holder and gear shaft collar. Remove the filler plug from the side of the gearcase and press new grease into the gearcase until old grease is pushed out. Use only lithium-base grease such as Shindaiwa Gear Case Lubricant or equivalent. See Figure 30.
- Lubricate main shaft splines.
- Use a hooked wire to extract the fuel filter from inside the fuel tank. See Figure 31.

### CAUTION!

Make sure you do not pierce the fuel line with the end of the hooked wire. The line is delicate and can be damaged easily.

- Remove and replace the filter element. Before reinstalling the new filter element, inspect the condition of all the fuel system components (fuel pick-up line, fuel return line, tank vent line, tank vent, fuel cap and fuel tank). If damage, splitting or deterioration is noted, the unit should be removed from service until it can be inspected or repaired by a Shindaiwa-trained service technician.

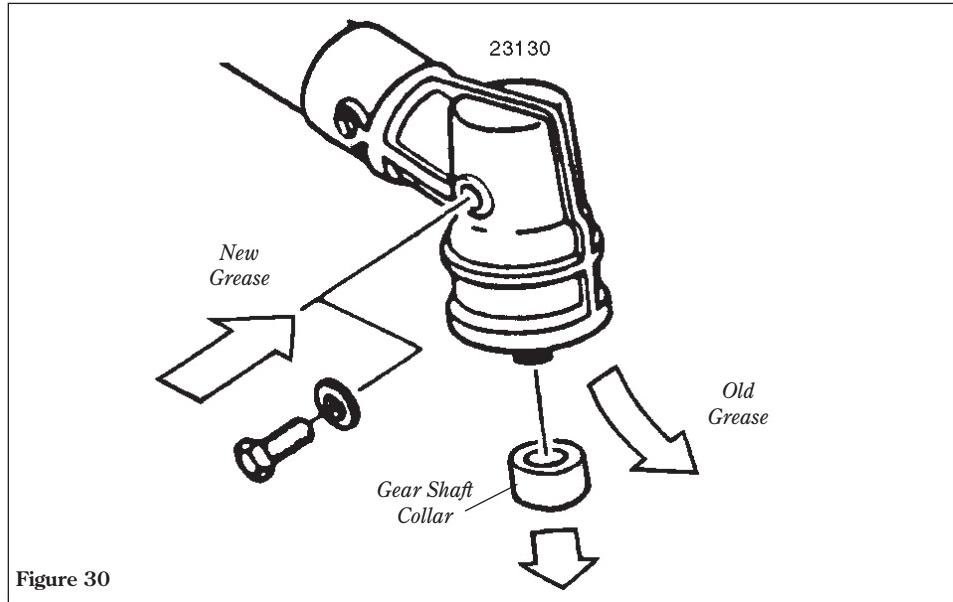


Figure 30

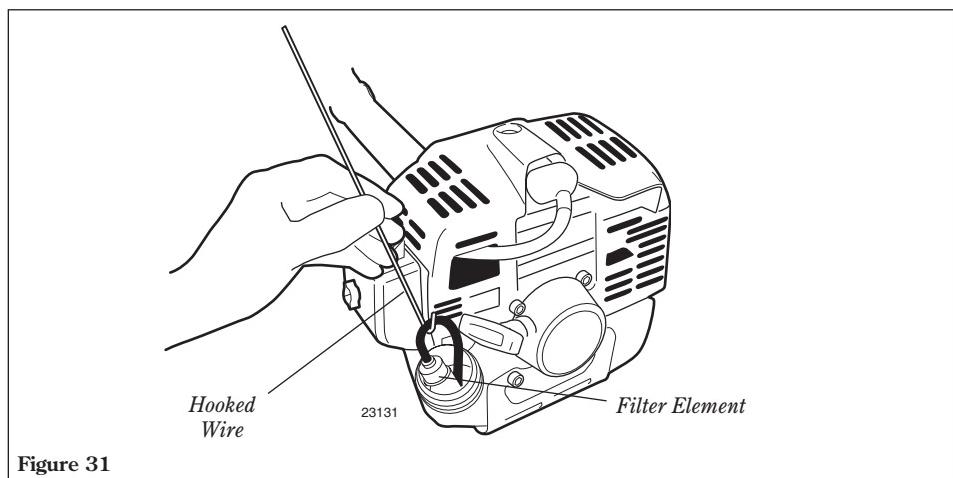


Figure 31

## 135-hour Maintenance

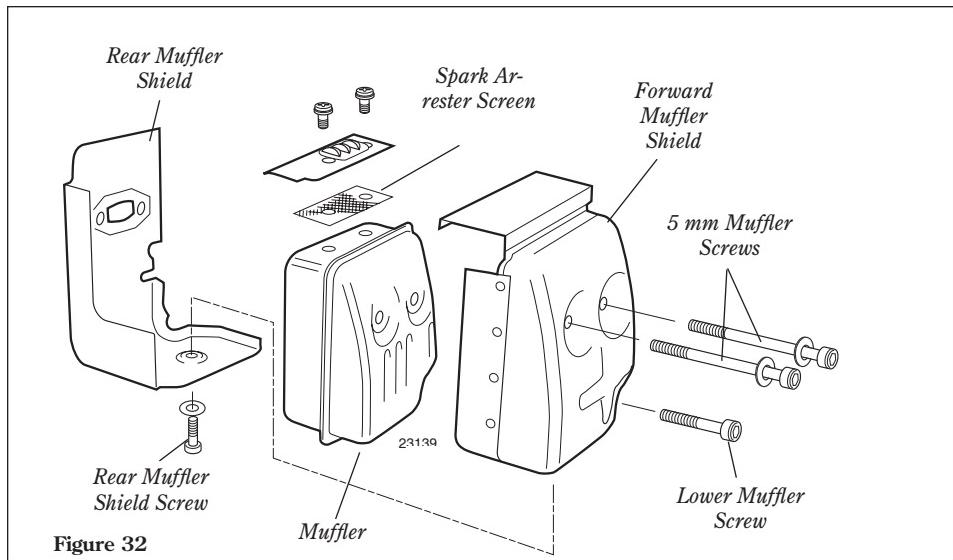
Every 135 hours of operation, remove and clean the muffler.



### WARNING!

Never operate the machine with a damaged or missing muffler or spark arrester! Operating with missing or damaged exhaust components is a fire hazard and could also damage your hearing.

1. Remove the spark plug boot.
2. Remove the two 4 mm engine cover screws (located at the top of the recoil housing).
3. Loosen the 5 mm engine top cover screw (the screw is captive) and lift the cover from the engine.
4. Remove the two 5 mm muffler screws. Remove the lower muffler screw, then lift the muffler assembly from the engine.



5. Remove the rear muffler shield socket head screw and, while noting the orientation of parts, separate the muffler shield. See Figure 32.
6. Remove the spark arrester screen and clean with a stiff bristle brush.
7. Gently tap the muffler on a wood surface to dislodge any loose carbon.

8. Inspect the cylinder exhaust port for carbon buildup.

### IMPORTANT!

If you note excessive carbon buildup, consult with an authorized servicing dealer.

9. Reassemble the muffler in the reverse order of disassembly.

## Long Term Storage

Whenever the unit will not be used for 30 days or longer, use the following procedures to prepare it for storage:

- Clean external parts thoroughly.
- Drain all the fuel from the fuel tank.

### IMPORTANT!

All stored fuels should be stabilized with a fuel stabilizer such as STA-BIL™, if Shindaiwa ONE oil with fuel stabilizer is not used.

### CAUTION!

Gasoline stored in the carburetor for extended periods can cause hard starting and could also lead to increased service and maintenance cost.

- Remove the remaining fuel from the fuel lines and carburetor.
1. Prime the primer bulb until no more fuel is passing through.
  2. Start and run the engine until it stops running.
  3. Repeat steps 1 and 2 until the engine will no longer start.

- Remove the spark plug and pour about 1/4 ounce of 2-cycle mixing oil into the cylinder through the spark plug hole. Slowly pull the recoil starter 2 or 3 times so oil will evenly coat the interior of the engine. Reinstall the spark plug.
- Before storing the unit, repair or replace any worn or damaged parts.
- Remove the air cleaner element from the carburetor and clean it thoroughly with soap and water. Let dry and reassemble the element.
- Store the unit in a clean, dust-free area.

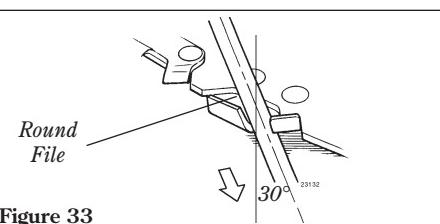
## Blade Sharpening

When the cutting edges of the blade become dull, they can be resharpened with a few strokes of a file.

In order to keep the blade in balance, all cutting edges must be sharpened equally.

### Shindaiwa Tornado® Blade

To sharpen the cutters on a Shindaiwa Tornado Blade, use a 7/32-inch round file. File the leading edge of each tooth to a razor edge. The top plate of each tooth should angle back 30°.



### WARNING!

Sharpen only the cutting teeth of a blade. DO NOT alter the contour of the blade in any way.

### Multiple-Tooth Circular Blade

Use a round file to maintain a radius of 0.04 to 0.06" (1 to 1.5 mm) at the base of each tooth. Cutting edges must be offset equally on each side.

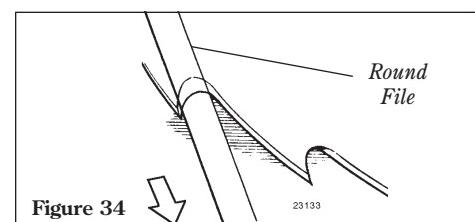
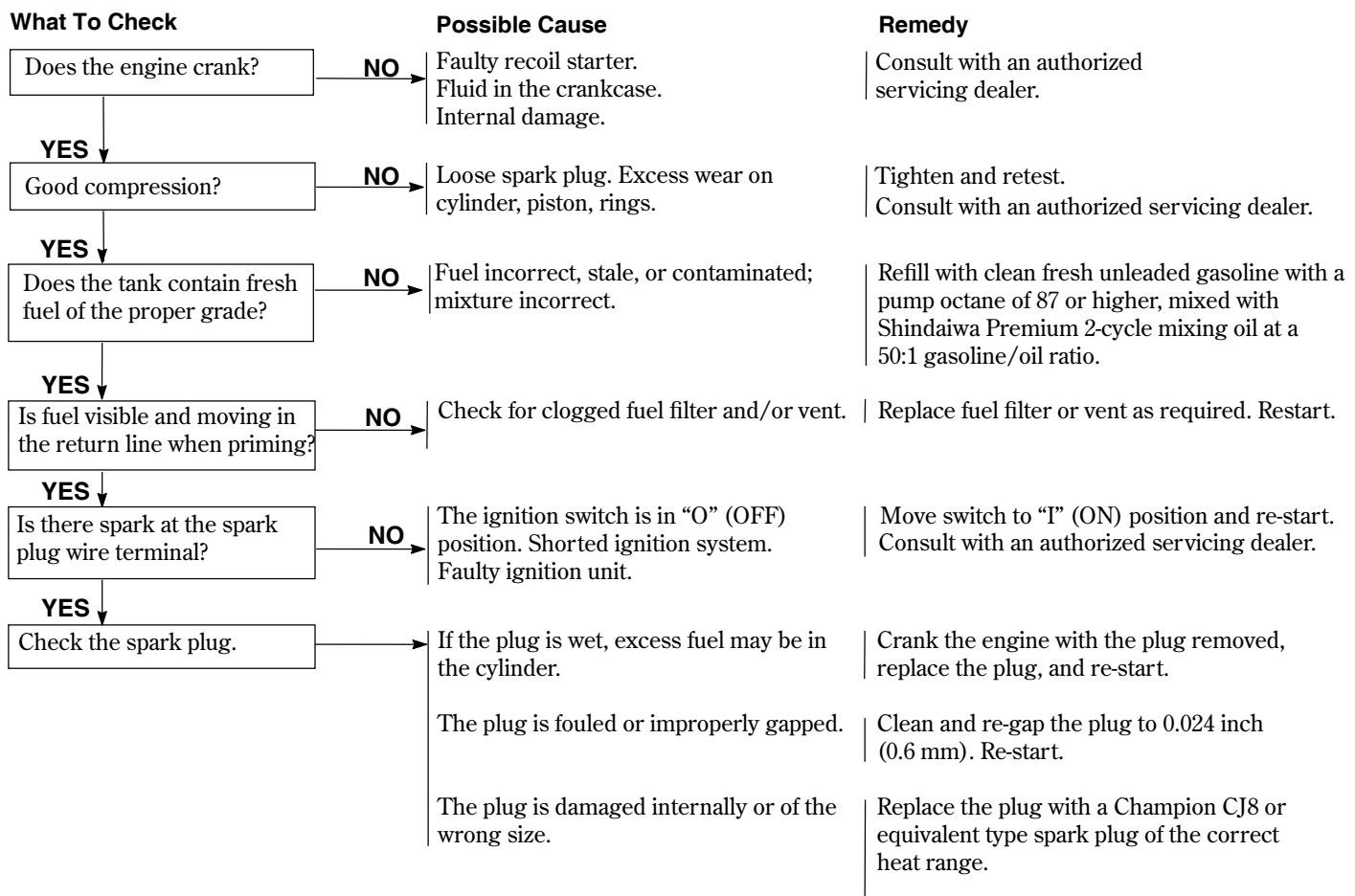


Figure 34

# Troubleshooting Guide

## ENGINE DOES NOT START



## Troubleshooting Guide (Continued)

### LOW POWER OUTPUT

What To Check	Possible Cause	Remedy
Is the engine overheating?	<p>Operator is overworking the unit.</p> <p>Carburetor mixture is too lean.</p> <p>Improper fuel ratio.</p> <p>Fan, fan cover, cylinder fins dirty or damaged.</p> <p>Carbon deposits on the piston or in the muffler.</p>	<p>  Shorten trimmer line. Cut at a slower rate.</p> <p>  Consult with an authorized servicing dealer.</p> <p>  Refill with clean fresh unleaded gasoline with a pump octane of 87 or higher, mixed with Shindaiwa Premium 2-cycle mixing oil at a 50:1 gasoline/oil ratio.</p> <p>  Consult with an authorized servicing dealer.</p> <p>  Consult with an authorized servicing dealer.</p>
Engine is rough at all speeds. May also have black smoke and/or unburned fuel at the exhaust.	<p>Clogged air filter.</p> <p>Loose or damaged spark plug.</p> <p>Air leakage or clogged fuel line.</p> <p>Water in the fuel.</p> <p>Piston seizure.</p> <p>Faulty carburetor and/or diaphragm.</p>	<p>  Clean or replace the air filter.</p> <p>  Tighten or replace the plug with a Champion CJ8 or equivalent type spark plug of the correct heat range.</p> <p>  Repair or replace filter and/or fuel line.</p> <p>  Refill with fresh fuel/oil mixture. See Page 9.</p> <p>  Consult with an authorized servicing dealer.</p>
Engine is knocking.	<p>Overheating condition.</p> <p>Improper fuel.</p> <p>Carbon deposits in the combustion chamber.</p>	<p>  See above.</p> <p>  Check fuel octane rating; check for presence of alcohol in the fuel. Refuel as necessary. See page 9.</p> <p>  Consult with an authorized servicing dealer.</p>

# Troubleshooting Guide (continued)

## ADDITIONAL PROBLEMS

Symptom	Possible Cause	Remedy
Poor acceleration.	Clogged air filter. Clogged fuel filter. Lean fuel/air mixture. Idle speed set too low.	Clean or replace the air filter.   Replace the fuel filter.   Consult with an authorized servicing dealer.   Adjust: 2,750 ( $\pm 250$ ) rpm (min $^{-1}$ )
Engine stops abruptly.	Switch turned off. Fuel tank empty. Clogged fuel filter. Water in the fuel. Shorted spark plug or loose terminal. Ignition failure. Piston seizure.	Reset the switch and re-start.   Refuel. See page 9.   Replace filter.   Drain; replace with clean fuel. See page 9.   Clean or replace spark plug with a Champion CJ8 or equivalent type spark plug of the correct heat range.   Replace the ignition unit.   Consult with an authorized servicing dealer.
Engine difficult to shut off.	Ground (stop) wire is disconnected, or switch is defective. Overheating due to incorrect spark plug. Overheated engine.	Test and replace as required.   Replace spark plug with a Champion CJ8 or equivalent spark plug of the correct heat range.   Idle engine until cool.
Cutting attachment rotates at engine idle.	Engine idle too high. Broken clutch spring or worn clutch spring boss. Loose attachment holder.	Set idle: 2,750 ( $\pm 250$ ) rpm (min $^{-1}$ )   Replace spring/shoes as required, check idle speed.   Inspect and re-tighten holders securely.
Excessive vibration.	Warped or damaged cutting attachment. Loose gearcase. Bent main shaft/worn or damaged bushings.	Inspect and replace attachment as required.   Tighten gearcase securely.   Inspect and replace as necessary.
Cutting attachment will not rotate.	Shaft not installed in powerhead or gearcase. Broken shaft. Damaged gearcase.	Inspect and reinstall as required.   Consult with an authorized servicing dealer.   Consult with an authorized servicing dealer.

**Shindaiwa Corporation**  
**Federal Emission Design And Defect Limited Warranty**  
**Utility And Lawn And Garden Engines**

Shindaiwa Corporation warrants to the initial purchaser and each subsequent owner, that this utility equipment engine (herein engine) is designed, built and equipped to conform at the time of initial sale, to all applicable regulations of the U.S. Environmental Protection Agency (EPA), and that the engine is free of defects in materials and workmanship that would cause this engine to fail to conform with EPA regulations during its warranty period. This emission warranty is applicable in all States, except the State of California.

For parts listed under PARTS COVERED, the dealer authorized by Shindaiwa Corporation will, at no cost to you, make the necessary diagnosis, repair, or replacement of any defective emission-related component to ensure that the engine complies with applicable U.S. EPA regulations.

#### **MANUFACTURERS WARRANTY COVERAGE**

When sold within the U.S., this engine's emission control system is warranted for a period of two (2) years from the date this product is first delivered to the original retail purchaser.

#### **OWNER'S WARRANTY RESPONSIBILITIES**

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Shindaiwa Corporation recommends that you retain all receipts covering maintenance on your engine, but Shindaiwa Corporation cannot deny a warranty claim solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the engine owner, you should however be aware that Shindaiwa Corporation may deny your warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your engine to the nearest dealer authorized by Shindaiwa Corporation when a problem exists.

If your Shindaiwa Dealer is unable to answer questions regarding your warranty rights and responsibilities, you should then contact your Shindaiwa Distributor.

For the name and telephone number of the Shindaiwa Distributor in your area, please call Shindaiwa Inc. at (503) 692-3070 between the hours of 8:00 AM and 5:00 PM Pacific Standard Time.

#### **PARTS COVERED**

Listed below are the parts covered by the Federal Emission Design and Defect Warranty. Some parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement of that part. The warranted parts include:

1. Carburetor Internal Components
  - Valve Assembly-throttle, Jet, Metering Diaphragm
2. Ignition System Components
  - Ignition Coil
  - Flywheel Rotor

The emission control system for your particular Shindaiwa engine may also include certain related hoses and connectors.

#### **LIMITATIONS**

The Federal Emission Design and Defect Warranty shall not cover any of the following:

- (a) conditions resulting from tampering, misuse, improper adjustment (unless they were made by the dealer or service center authorized by Shindaiwa Corporation during a warranty repair), alteration, accident, failure to use the recommended fuel and oil, or not performing required maintenance services,

- (b) the replacement parts used for required maintenance services,
- (c) consequential parts used for required maintenance services,
- (d) diagnosis and inspection fees that do not result in eligible warranty service being performed, and
- (e) any non-authorized replacement part, or malfunction of authorized parts due to use of non-authorized parts.

#### **MAINTENANCE AND REPAIR REQUIREMENTS**

You are responsible for the proper use and maintenance of the engine. You should keep all receipts and maintenance records covering the performance of regular maintenance in the event questions arise. These receipts and maintenance records should be transferred to each subsequent owner of the engine. Shindaiwa Corporation reserves the right to deny warranty coverage if the owner has not properly maintained the engine. Shindaiwa Corporation will not deny warranty repairs, however, solely because of the lack of repair, maintenance or failure to keep maintenance records.

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY A DEALER OR SERVICE CENTER AUTHORIZED BY SHINDAIWA CORPORATION THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF A WARRANTY CLAIM.

If other than the parts authorized by Shindaiwa Corporation are used for maintenance replacements or for the repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to the parts authorized by Shindaiwa Corporation in their performance and durability.

#### **OBTAINING WARRANTY SERVICE**

All repairs qualifying under this limited warranty must be performed by a dealer authorized by Shindaiwa Corporation

If any emission-related part is found defective during the warranty period, it is your responsibility to present the product to an authorized Shindaiwa dealer. Bring your sales receipts showing the date of purchase for this engine. The dealer authorized by Shindaiwa Corporation will perform the necessary repairs or adjustments within a reasonable amount of time and furnish you with a copy of the repair order. All parts and accessories replaced under this warranty become the property of Shindaiwa Corporation

To locate an authorized Shindaiwa dealer near you, contact your Shindaiwa Distributor. For the name and telephone number of the Shindaiwa Distributor in your area, please call Shindaiwa Inc. at (503) 692-3070 between the hours of 8:00 AM and 5:00 PM Pacific Standard Time.

#### **THIS WARRANTY IS ADMINISTERED BY**

Shindaiwa Inc.  
11975 S.W. Herman Rd.  
Tualatin OR 97062  
(503) 692-3070

## **NOTES:**

**shindaiwa**

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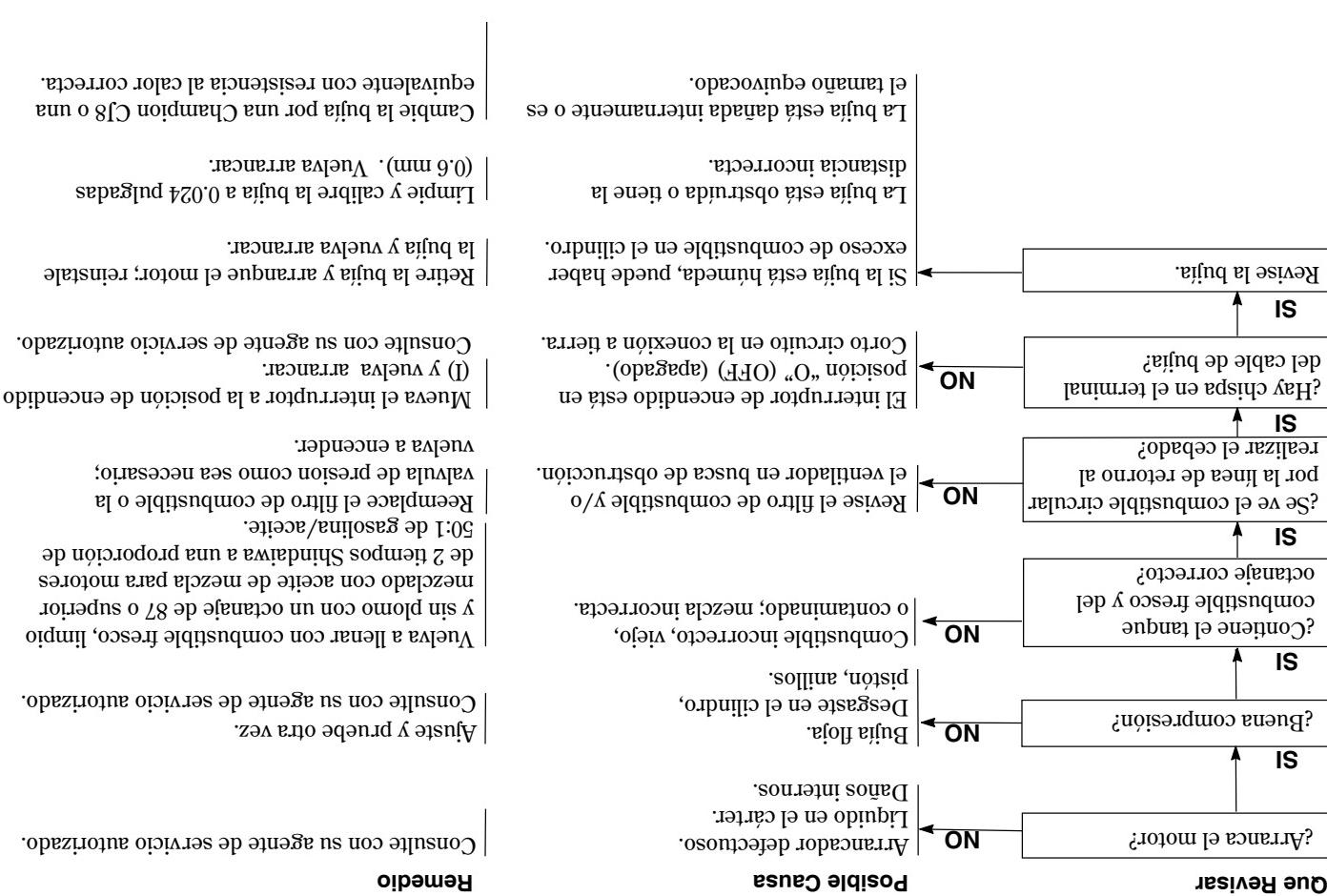
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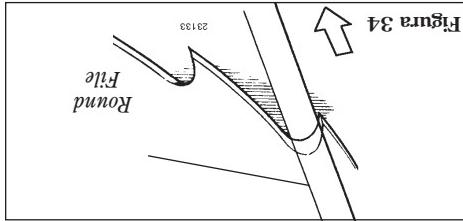
**shindaiwa**



Síntoma	Possible Causa	Remedio
El motor se apaga abruptamente.	El interruptor esta en la posición de apagado. El tanque de combustible esta vacío. Filtro de aire obstruido. Limpie o reemplace el filtro de aire.	Ajuste: a 2,750 RPM ( $\pm 250$ ) rpm (min⁻¹). Limpie el filtro de combustible. Cambie el filtro de combustible.
Aceleración deficiente.	Filtro de combustible obstruido. Limpie o reemplace el filtro de combustible.	Limpie o reemplace el filtro de combustible.
El motor se apaga.	El motor se apaga. La mezcla de combustible/aire es muy pobre. Consulte con su agente de servicio autorizado.	La mezcla de combustible/aire es muy pobre. Consulte con su agente de servicio autorizado.
El motor se apaga.	El motor se apaga. Falla en el sistema de encendido. Reemplace el sistema de encendido.	Pista: trabajado. Consulte con su agente de servicio autorizado.
Se hace difícil apagar el motor.	La conexión a tierra está desconectada, o el interruptor está defectuoso. Pruebe y reemplace como sea requerido.	Pruebe y reemplace como sea requerido. La conexión a tierra está desconectada, o el interruptor está defectuoso.
Se hace difícil apagar el motor.	Sobrecalentamiento debido a bujía incorrecta. Reemplace la bujía por una Champion CJ8 o una equivalente con resistencia al calor.	Motor sobrecaleñado. Marcha mínima hasta que entre.
Se hace difícil apagar el motor.	Marcas mínimas ajustadas muy alta. Fije la marcha mínima: 2,700 rpm ( $\pm 250$ ) rpm (min⁻¹).	Marcas mínimas ajustadas muy alta. Fije la marcha mínima: 2,700 rpm ( $\pm 250$ ) rpm (min⁻¹).
Vibración excesiva.	El accesorio esta dañado o doblado. Inspección y cambie el accesorio como sea necesario.	El soporte del accesorio esta flojo. Inspección y apriete seguramente los soportes.
El corredor no gira.	El eje no está instalado en el motor o en la caja de engranajes. Se necesita.	Eje quebrado. Consulte con su agente de servicio autorizado.
Caja de engranajes dañada.	Eje principal está doblado o los bujes están dañados o gastados. Apriete la caja de cambios firmemente.	Eje principal.
Caja de engranajes dañada.	La caja de cambios está floja.	La caja de cambios.
Caja de engranajes dañada.	Inspección y cambie como sea necesario.	Inspección y cambie como sea necesario.
Caja de engranajes dañada.	Consulte con su agente de servicio autorizado.	Consulte con su agente de servicio autorizado.

Que Revisar	Posible Causa	Remedio	¿Se está sobrellenando el motor?	El motor funciona bruscamente en calidad de escape.	El motor está golpeando.
• Que revisar?	• La mezcla del carburador es muy pobre.	• Consulte con su agente de servicio autorizado.	• La mezcla del carburador es muy rica.	• La mezcla es demasiado rica.	• Limpie o reemplace el filtro de aire.
• Posible Causa	• La mezcla es demasiado rica.	• Consulte con su agente de servicio autorizado.	• La mezcla es demasiado pobre.	• La mezcla es demasiado pobre.	• Apriete o reemplace la bujía por una Champion C8 que una equivalente con resistencia al calor correcta. Vuelva a encender.
• Remedio	• Recorte el cable de nylon.	• Consulte con su agente de servicio autorizado.	• Bujía floja o dañada.	• Bujía floja o dañada.	• Fuga de aire o línea de combustible obstruida.
• ¿Se está sobrellenando el motor?	• La mezcla del carburador es muy rica.	• Consulte con su agente de servicio autorizado.	• Bujía floja o dañada.	• Bujía floja o dañada.	• Fuga de aire o línea de combustible obstruida.
• El motor funciona bruscamente en calidad de escape.	• La mezcla es demasiado pobre.	• Consulte con su agente de servicio autorizado.	• Bujía floja o dañada.	• Bujía floja o dañada.	• Agua en el combustible.
• El motor está golpeando.	• Agua en el combustible.	• Consulte con su agente de servicio autorizado.	• Pistón trabado.	• Consulte con su agente de servicio autorizado.	• Revise el imán de octanaje del combustible.
• El motor está golpeando.	• Revise el imán de octanaje del combustible.	• Consulte con su agente de servicio autorizado.	• Carburador defectuoso y/o diafragma.	• Consulte con su agente de servicio autorizado.	• Revise si hay alcohol en el combustible. Vuelva a llenar si es necesario. Consulte página 9.
• El motor está golpeando.	• Revise si hay alcohol en el combustible. Vuelva a llenar si es necesario. Consulte página 9.	• Consulte con su agente de servicio autorizado.	• Depósitos de carbono en la cámara de combustión.	• Consulte con su agente de servicio autorizado.	• Consulte con su agente de servicio autorizado.

**EL MOTOR NO ARRANCA**



tar. NO altere de ninguna forma el  
contorno del disco.

ADVETENCIA!

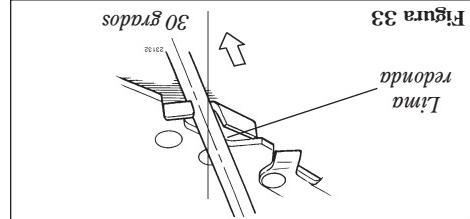
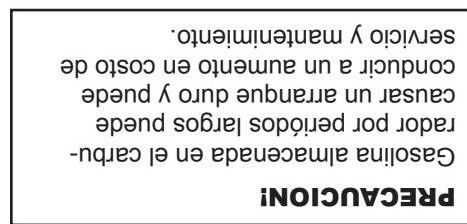


Figura 33

Use una lima redonda para mantener un radio de 0,04 a 0,06 pulgadas (1 a 1,5mm) en la base de cada diéntre. Los diéntres deben quedar igualmente descentrados para cada lado.

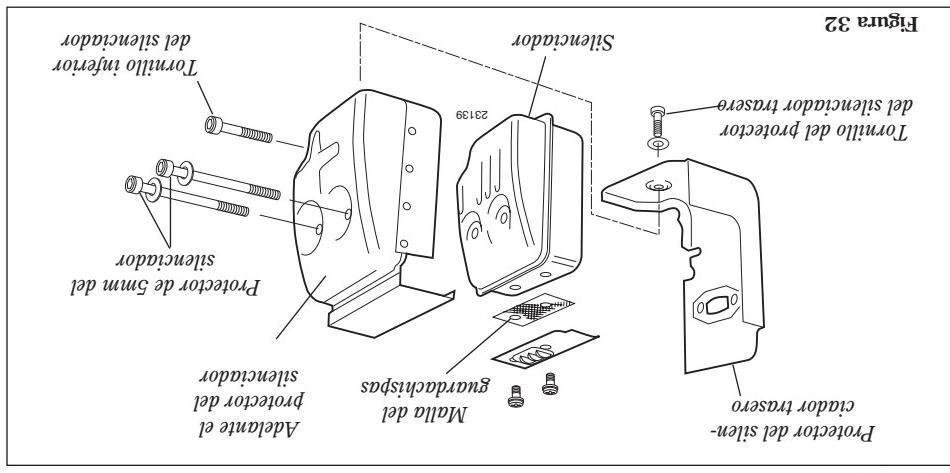
### **Discos de Unidades Multiples**



PRECAUCIÓN!

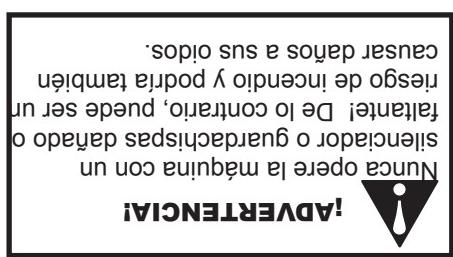
!IMPORTANT

3. Inspección el escape del cilindro en busca de acumulación de carbono.



## Mantenimiento Cada 135-Horas

!ADVERTENCIAS



Cada 135 horas de operación, retire y limpie el silenciador.

**DISCO Shindaiwa Tornando™** Para allíjar los dientes de corte de un disco shindaiwa Tornando™, use una lima de 7/32 pulgadas. Afile el borde superior de cada diente hasta obtener un filo similar al de una hoja de afeitar. La superficie superior de cada diente debe tener una inclinación de 30 grados. Consulte la figura 33.

Afilado de Discos

- Cada vez que la máquina no va a ser usada por 30 días o más, si gasea los sifuentes procedimientos para preparar su almacenamiento.
  - Limpie las partes exteriores.
  - Drene todo combustible en el tanque.
  - Todo combustible almacenado debe estar estabilizado con un estabilizador de combustible tal como STA-BIL®, al menos que sea acepte  de combustible combinador de combustible.

!IMPORTANT

1. Retirar el capuchón de bujía.

2. Retirar los dos tornillos de 4 mm de la tapa del motor (ubícalos encima de la caja del arrancador).

3. Aflojar el tornillo de 5 mm de la tapa del motor (el tornillo es cautivo) y levantate la tapa del motor.

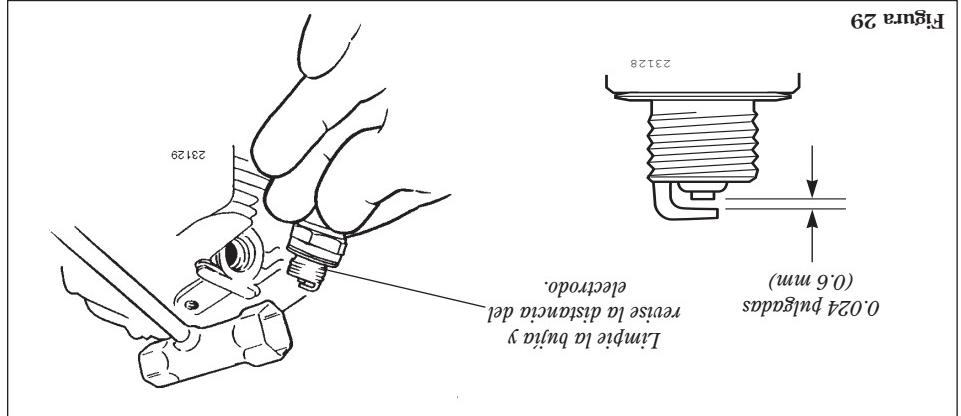
4. Retirar los dos tornillos de 5 mm del si- lenciador. Retirar el tornillo inferior del silenciador, y luego levantate el montaje del silenciador fuera del motor.

## Mantenimiento Cada 50-Horas

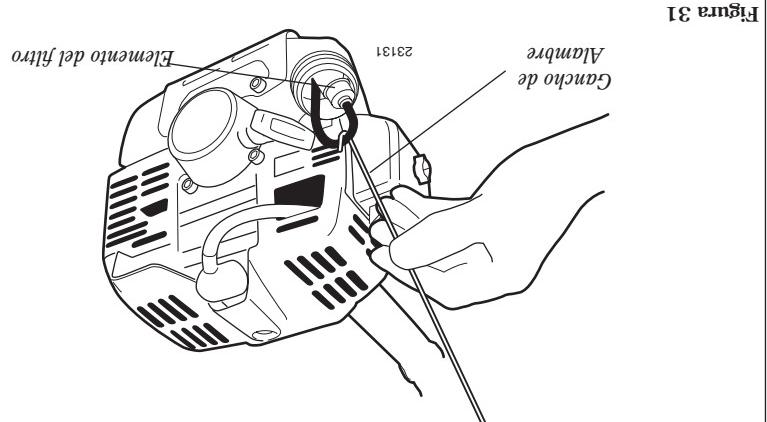
**PRECAUCION!**

Cada 10 ó 15 horas de operación:

Retire y limpie la bujía. Ajuste la distancia del electrodo a 0,024 pulgadas (0,6 mm). Si la bujía necesita ser reemplazada, use bujía equivalente con resistencia al calor solamente una bujía NGK CMR6H o una intermitente polo vivo o sucedad a las partes dedor de la misma para evitar que entre polvo o suciedad a las partes dedor de la bujía, limpie alrededor de la bujía y entre polo vivo o sucedad a las partes intermitentes del motor.



## Mantenimiento Cada 10/15-Horas

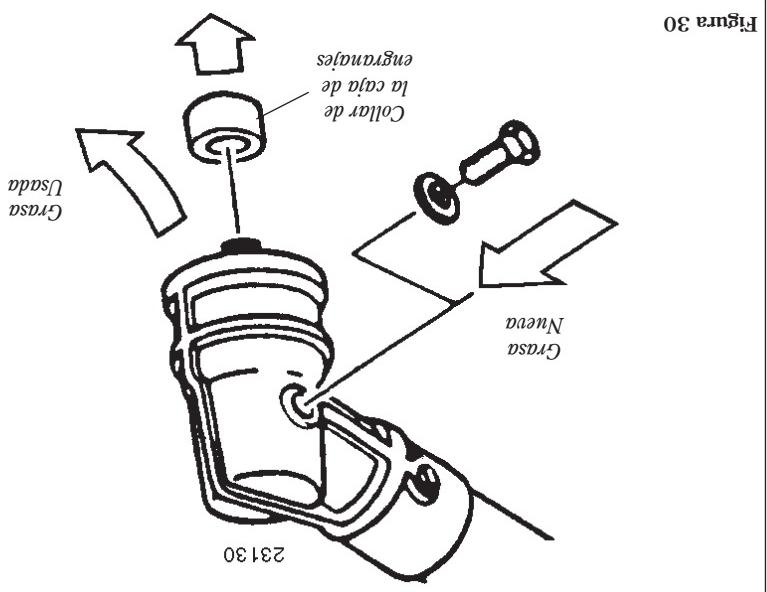


**■ Retire y reemplace el elemento del filtro.**

Antes de reemplazar el elemento del filtro, inspeccione la condición de todo los componentes del sistema de filtro, incluyendo la manguera hasta que la tubería de combustible con la punta del gancho flexible (manguera de alimentación, manguera del ventilador, etc.) y la tapa y tanque. Si descubre daños, repara la tubería de combustible o detornízcalo, reemplace la manguera del ventilador, etc., y la tapa y tanque. Si no se reparan, el servicio entreneado por un técnico de servicio preparada para la tubería de combustible o detornízcalo, reemplace la manguera del ventilador, etc., y la tapa y tanque.

**PRECAUCION!**

Asegure de no perforar la tubería de combustible. Consulte la figura 31.



**■ Lubrique las estriadas del eje principal.**

Use un gancho de alambre para extraer el filtro de combustible del tanque de combustible. Consulte la figura 31.

**■ Lubrique las estriadas del collar de engranajes.**

Use una grasa especial para engranajes o su equivalente. Consulte la figura 30.

**■ Retire el accesorio de corte, el soporte del accesorio de corte y el collar de la caja de engranajes. Retire la tuerca del collar de engranajes e introduzca grasa nueva en la caja hasta que la grasa usada salga. Use solamente grasa a base de aceite mineral del costado de la caja de engranajes. Retire la tuerca del collar de la caja de engranajes. Retire la tuerca del collar de engranajes e introduzca grasa nueva en la caja hasta que la grasa usada salga. Use solamente grasa a base de aceite mineral del collar de engranajes o su equivalente.**

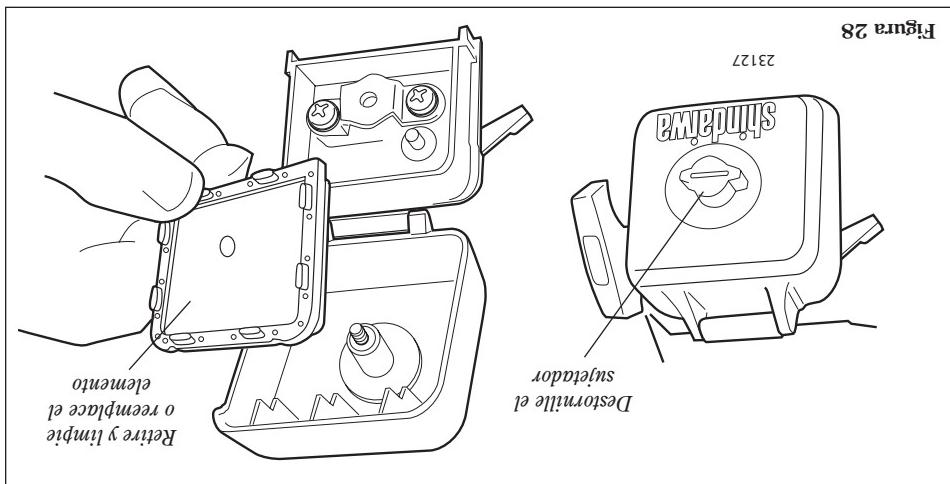
**■ Limpie la maleza y la suciedad en las alejas del cilindro.**

Retire y limpie la tapa del cilindro y más frecuentemente bajo condiciones sucias o polvorrientas:

Cada 50 horas de operación (más frecuentemente bajo condiciones sucias o polvorrientas):

**■ Asegure de no perforar la tubería de combustible con la punta del gancho flexible (manguera de alimentación, manguera del ventilador, etc.) y la tapa y tanque. Si descubre daños, repara la tubería de combustible o detornízcalo, reemplace la manguera del ventilador, etc., y la tapa y tanque. Si no se reparan, el servicio entreneado por un técnico de servicio preparada para la tubería de combustible o detornízcalo, reemplace la manguera del ventilador, etc., y la tapa y tanque.**

Shimadawa.



#### Mantenimiento Cadá 10-Horas

- Revisa que no falten tornillos y que no estén flojos. Cerciorarse de que el accesorio de corte este firme.
- Revisa la máquina entra en busca mente asegurado.
- Revisa la máquina de combustible o grasa.

Cuidadosasmete, retire el cuadriñer acumulacion de suciedad o de-  
spajo del silenciodor y del tanque  
de combustible. La acumulacion  
de suciedad en dichas áreas puede  
ocasionar el sobrecalentamiento  
del motor, inducir el gasto premia-  
tu o crear un riesgo de incendio.

- Reírse toda sucedad y despojo del que se siente lo mismo.

Nunca prepare un disco sacando soldandolo, enderezandolo o modificando su forma. Una vez alterado, podria quebrarse en plena operacion y ocasionar lesiones personales serias.

No use discos de corte de 2 díen-  
tes o discos de corte de 4 díen-  
tes o probados por Shindaiwa en  
no probados por Shindaiwa en  
su desmalezadora o podadora  
Shindaiwa.

Los discos de corte no son inter-  
cambiables entre las bordadoras  
o desmalezadoras. El uso de  
cuadrejera unida con discos o  
accesorios no aprobados para  
la respectiva unidad pueden ser  
perigrosos y ocasionar lesiones graves.

!ADVERTENCIA

Mantenga los discos afilados y revise  
la condición del disco frecuentemente.  
Si el rendimiento de un disco cambia  
de repentinamente, pare el motor y re-  
visé el disco en busca de rajaduras u  
dicho daño. Reemplace el disco dañado  
y mediate mente!

Cuchillas

**NOTA:** Los repuestos no estandar que no operen propiamente suelen suceder en la medida que se manejan y pueden causar daño a conductores y pasajeros.

-ADVERTENCIA

Antes de efectuar mantenimiento, limpiar la máquina, cerciorarse de que el motor esté en marcha y el accesorio de corte estén completamente detenidos. Desconectar el cable de bujía antes de efectuar servicio de mantenimiento.

!ADVERTENCIA!

Esta máquina nunca debe ser operada con un guardacabezas o silenciodor defectuoso o faltante. Cerciorarse de que el silenciodor esté bien asegurado o una condición. Un silenciodor usado o dañado es un riesgo de incendio y puede causar la perdida de audición.

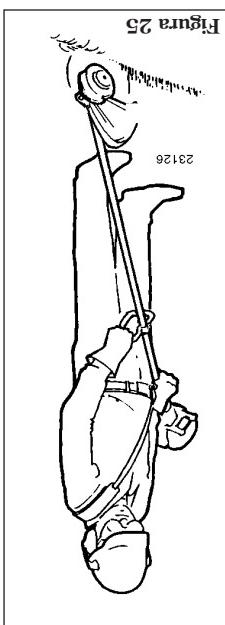
## Silenciar

**E**l usuario realizó una solicitud de estandarización inválida.

**NOTA:**

EL MANTENIMIENTO, REEMPLAZO O REPARRACION DE LOS SISTEMAS DE DISPOSICIONES DE CONTROL DE EMISIONES PUEDEN SER ESTABLECIMIENTOS POR INDIVIDUOS; SIN EMBARGO, LAS PREPARACIONES DE GARNITA DEBEN SER EFECTUADAS POR UN CENTRO AUTORIZADO POR SHINDAIWA COOPORTACION DEL USO DE PARTES QUE NO SON EQUIVALENTES EN RENDIMIENTO Y DURABILIDAD A LAS PARTES AUTORIZADAS PUEDES AFECTAR LA EFECTIVIDAD DE SU SISTEMA DE CONTROL DE EMISION Y PUDE INFLUENCIA EL RESULTADO DE SU RECLAMO DE GARNITA





a 25

Sostenga la podadura de tal forma que el capóezal esté en ángulo al área de corte. Para obtener máxima vida útil del cable de nylon, corté solamente con la punta del

Corte de Cesped - Maquinaria Equivalente con Cabecera de Corte

**E**sas una correa de hombre al operar esta unidad con una cuchilla, le permite mantener su control propio de la unidad y reduce la fatiga durante extensa operación.

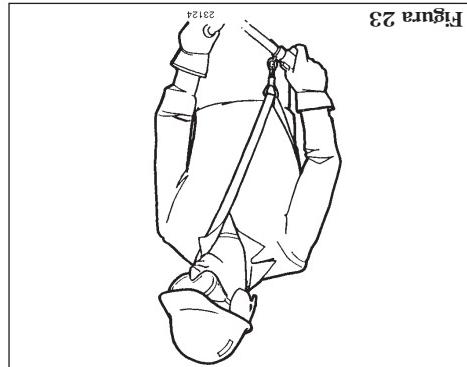
**NOTA:**

Siempre use una correa de cuñando opere esta unidad  
hombro con una cuchilla. Una correa de  
hombro es también recomendada  
cuando use cable de nylon.



ADVETENCIJA!

La T23IX Operando Con Una Cuchilla



32

Consiste la figura 23.

**NOTA:**

Ajuste la correa de hombre o arneses de tal forma que la almohadilla descanse como-  
damente sobre los lados de los hombres.  
Y que la trayectoria de corto del accesorio  
de corto este paralelo al suelo. Asegure  
que todo los ganchos y dispositivos de  
ajuste estén asegurados.

Corregia de Arnes

- NUNCA use la máquina con sujetador o sujetadores.
- a altas revoluciones sin cargar. De lo contrario, pondrá dañar el motor.
- NUNCA permita que el motor funcione a las revoluciones sin cargar. De lo contrario, pondrá dañar el motor.
- NUNCA opere la unidad sin el protector del accesorio de correa o sin equipo de protección.



ADVERIENCIA

USE SOLAMENTE REPUESTOS Y ACCESORIOS AUTORIZADOS POR SHIMADAIWA. NO HAGA MODIFICACIONES A LA UNIDAD SIN LA APROBACIÓN ESCRITA DE SHIMADAIWA. SHIMADAIWA EN SU PODER AUTORIZA A LOS PROTECTORES DE PROYECTOS DE CONSTRUCCIÓN A REEMPLAZAR LOS ACCESORIOS DAÑADOS O DEFECTUOSOS. SHIMADAIWA NO SE RESPONSABILIZA DE LOS DAÑOS OCASIONADOS POR EL USO DE ACCESORIOS NO AUTORIZADOS.

**!ADVERTENCIA!**

EL PROTECTOR DEL ACCESORIO DE COFRE O EQUIPO DE PROTECCIÓN NO GARANTIZA PROTECCIÓN CONTRA ROBOS.

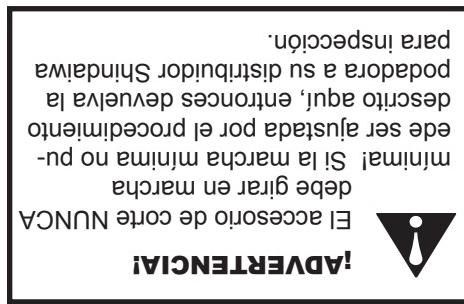
USTED SIEMPRE DEBE PROTEGERSE DE DESPJOOS VOLANTES!



Verifique la Condición de la Unidad

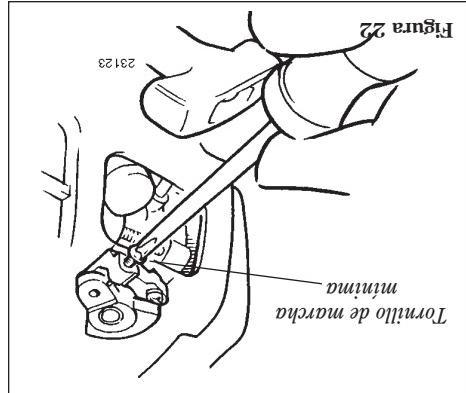
ser cambiados en el campo

1. Coloque la podadora en el suelo, luego encienda el motor y desejo la cuchilla hasta que comience a girar.
  2. Si el accesorio de corte gira mientras el motor esta en marcha minimamente, reduzca la marcha minima, girando el tornillo de ajuste de marcha minima en el sentido contrario a las agujas del reloj.
  3. Si tiene un tacómetro disponible, la marcha minima se debe ajustar a 3,200 rpm ( $\pm 300$ ) rpm (min<sup>-1</sup>).
  4. Los ajustes de mezcla de carburoador son preajustados en la fábrica y no pueden ser cambiados en el campo.



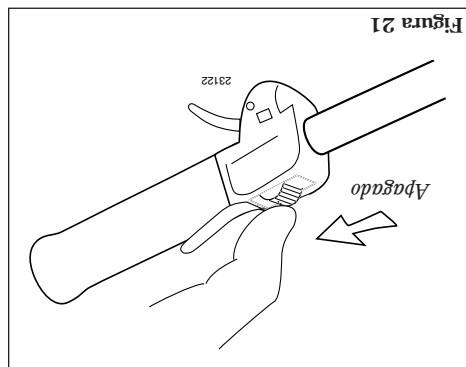
Ajuste de Marcha Mínima

El motor debe retorñar a marcha minima cuando la palanca del acelerador es libbreada. La marcha minima es ajustable y debe ser suficientemente minima para permitir que el embrague del motor libre el accesorio de corte.



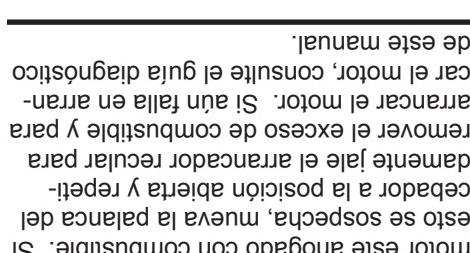
#### Ajuste de Marcha Mínima del Motor

Pongá el motor en marcha mínima por unos segundos deseñice el interrumpor de ignición a los tres minutos antes de apagarlo, la posición "O" (motor apagado).



Parada del Motor

Marcha Minima a continuation)



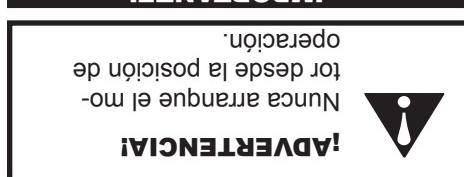
IMPORANTE

Nunca arranque el motor desde la posición de operación.



Cuando Arranca el Motor

- Despues de arrancar el motor, levante la m醩quina y asegure el arnes despues de que caliente el motor.
  - Despues de arrancar el motor, permita que caliente en marcha minima por 2 o 3 minutos antes de usar la m醩quina.
  - Despues de arrancar el motor, si asi esta equipada. Consulte la p醙ina 11.



### **Arranque del Motor (continuacin)**

El acceso solo de culto  
pueda que gire cuando  
encienda el motor





## Ensambelaje: Disco/Cuchilla T231X

### Monte la Cuchilla de Corte

- Almíñe la muéscia en el Soporte "A".
- Deselice el retén de seguridad fuera del eje de la caja de engranajes y luego bórdele del soporte central sobre el retén de seguridad.
- Encase la cuchilla sobre el retén de seguridad y luego centrelo sobre el eje de la caja de engranajes.
- Instale el disco en su lugar centrando el soporte central temporalmente el retén de seguridad.

### PRECAUCIÓN

- Instale el disco de tal manera que su superficie impresa sea visible al operador cuando la unidad esté en la posición normal de operación.

### !ADVERTENCIA!

- El disco debe encoger en forma plana contra el borde del sujetador. La muéscia de montaje del sujetador se debe centrar y formar una forma plana contra el borde del sujetador. La muéscia debe centrarse del disco en su lugar centrando el soporte central temporalmente el retén de seguridad.

### !ADVERTENCIA!

- Nunca opere la T231 sin el retén de seguridad instalado.
4. Asegure el disco en su lugar centrando el retén de seguridad en el eje de seguridad. Consulte la figura 14.

### !IMPORATANTE!

- El reborde en el sujetador B debe rodar contra la superficie del disco.
6. Instale el protector del perno y luego el perno de retención de la cuchilla. Usando la llave de bujía/desatornila completamente el retén de seguridad contra la cuchilla.

7. Retire la llave hexagonal.

Las agujas del reloj.

firmemente en dirección contraria a la dor combinada, apriete el perno Usando la llave de la cuchilla. el perno de retención de la cuchilla. Usando la llave de bujía/desatornila completamente el retén de seguridad contra la cuchilla.

6. Instale el protector del perno y luego el perno de retención de la cuchilla. Usando la llave de bujía/desatornila completamente el retén de seguridad contra la cuchilla.

5. Instale el sujetador B en el eje de salida. Consulte la figura 15. El sujetador B debe encoger apretadamente contra el soporte de cubrir completamente el retén de seguridad.

### !ADVERTENCIA!

- Reten de seguridad instalado.

La T231X debe estar ahora completamente ensamblada y lista para ser usada con una cuchilla.

Figura 15

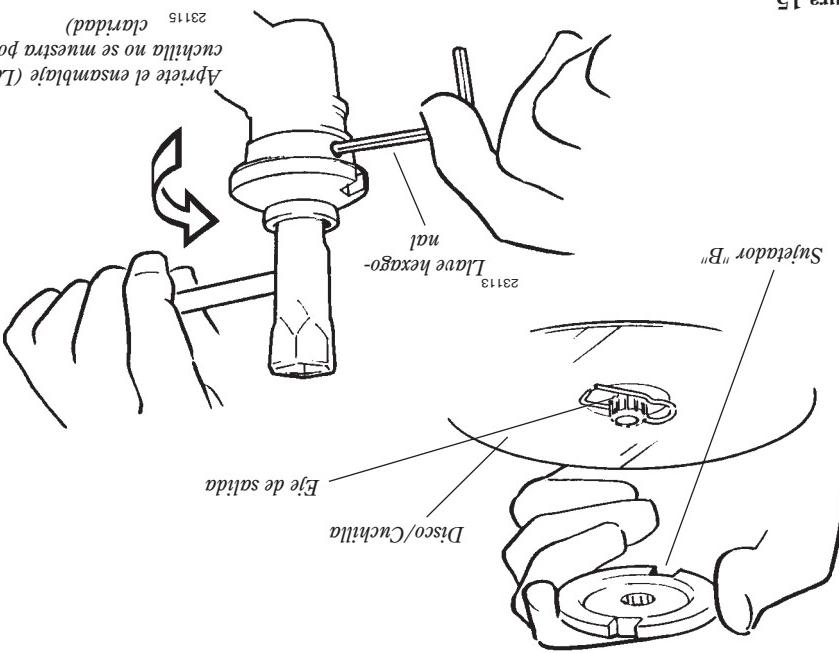


Figura 12

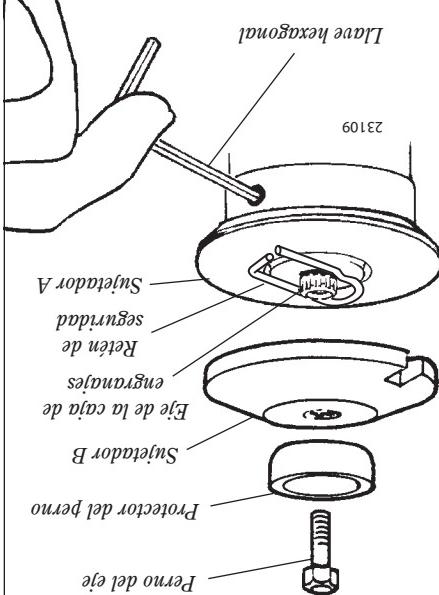


Figura 14

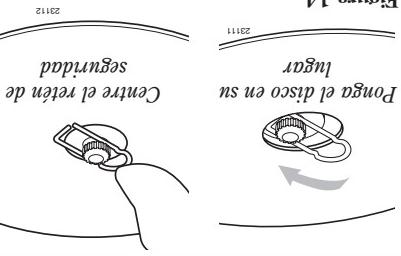
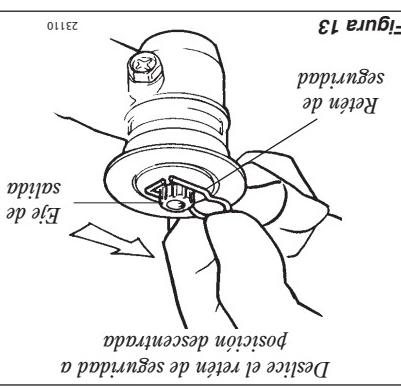


Figura 13



La unidad debé ahora estar completamente ensamblada y lista para ser usada con un cabezal.



**Figura 11**

Para una instalar el  
cabezal en una  
T231X, primero  
retirar el perno del  
sje, el protector del  
perno y el reten  
de seguridad  
(consule la  
siguiente pagina).

que el operario entre en contacto con el acceso de cortes (Norma ANSI B175.3). Cuando use una cuchilla, la unidaad debe estar equipada con un armes o correa.

ADVERTENCIAS

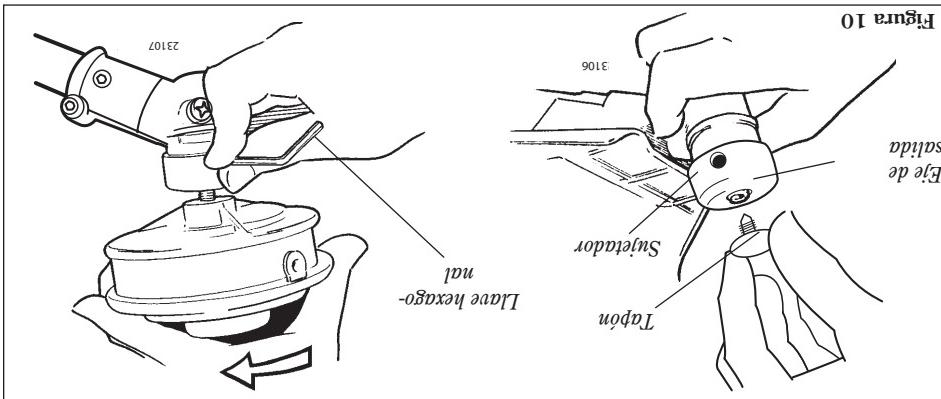


Figura 10

A detailed line drawing of a fly's head and thorax. The head features large compound eyes and a small mouthpart. The thorax is divided into three segments, each with visible legs. Labels are placed around the fly: '3106' at the top left; 'Subjectator' pointing to the head; 'Taphon' pointing to the middle thoracic segment; and 'Eye de salilda' pointing to the right side of the head.

**Ensamblaje: Cabeza de Corre**

1. Reñe los dos tornillos con una llave hexagonal de 4mm. Consulte la figura 9A.

2. Tenga cuidado y no pierda las dos tuercas que sujetan el protector del accesorio de corte, las tuercas no están capturadas.

3. Remontale los tornillos y apriételos firmemente.

NOTA:

4. Gire la cuchilla de corte. Consulte la figura 9A.

La cuchilla de cortar es muy  
aguda. Use guantes para  
proteger sus manos.



Radio firme mente.  
cesorio de corte instaldo y asegu-  
sin el protector del ac-  
NUNCA opere la unidad  
**!ADVERTENCIA!**



•

Figure 9A hexagonals

Figura 9

cuatro tornillos de cabeza allen.

•

Figure 9A hexagonals

Figura 9

cuatro tornillos de cabeza allen.

•

Figure 9A hexagonals

Figura 9

cuatro tornillos de cabeza allen.

**PRECAUCIÓN!**

**NOTA:** Pueda que sea necesario alforjar el retén y el tornillo sujetador para ajustar la placa de montaje del protector del accesoario de correa.

2. Coloque los dos espaciadores y el soporte sobre el tubo exterior e instale los ajustar los cuatros tornillos de ca- beza allen. Consulte la figura 9.

Asegurese de que el tornillo sujetan- dor y el retén estén debidamente apretados antes de apretar los cuatros tornillos de cabeza allen.

**PRECAUCION!**

ON

**Ensamblaje:** Protector del Accesorio de Corte

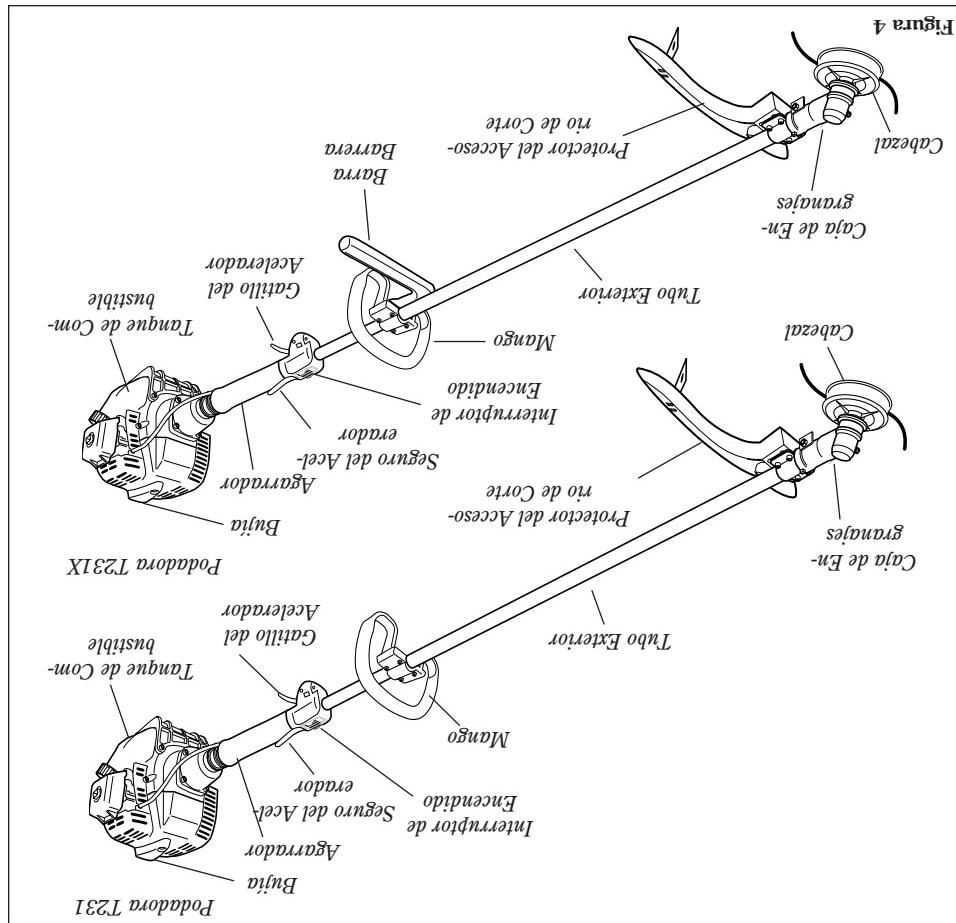


## **Descripción del Producto**

\*\* El cumplimiento de emisiones EPA restringido en la etiqueta en el motor, indica el numero de horas de operacion por la cual el motor ha demostrado cumplir con los requisitos federales de emisiones. Categoría C = 50 horas (Moderno), B = 125 horas (intermedio) y A = 300 horas (Extenido).

T231 Peso sin combustible (sin accesorios).....	10.9 libras/4.9 kg	Modelo de motor.....	Shimadawa S230C
Tipo de motor.....	2 tiempos, catalizador, cilindro vertical,	Diametro x Carrera.....	1.26 x 1.10 pulg./32 mm x 28 mm
Cilindrada.....	1.4 pulg. Cilíndicas/22.5cc	Potencia Máxima.....	1.1 HP/0.8 kW @7500 rpm (min-1)
Combustible/Acetile.....	50:1 con ISO-L-EGD o JASO FC	Combustible	Acetile
Acetile de mezcla de motor 2 tiempos*.		Tipo de Carburador.....	Walbro WYL-122, tipo diafragma
Capacidad del Tanque de Combustible .....	22.7 onzas/670 ml	Sistema de Encendido .....	Transistor controlado
Por una pieza eléctrica.		Sistema de Encendido .....	Transistor controlado
Especificaciones sujetas a cambio sin previo aviso.			

## **Especificaciones**

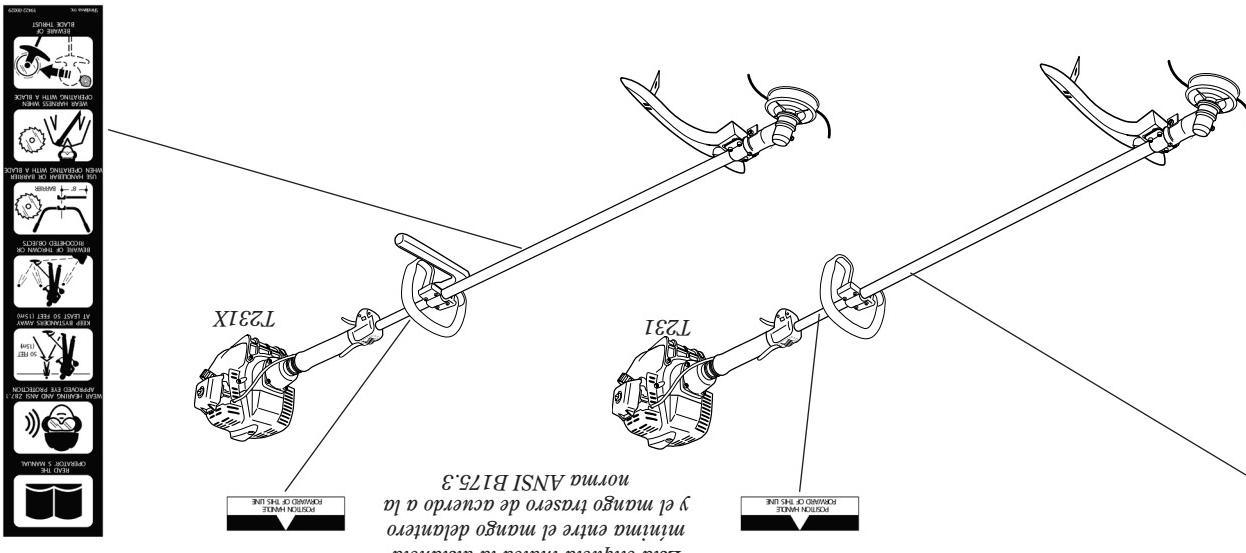


No haga modificaciones  
o alteraciones no autorizadas a  
ninguna de estas máquinas ni a sus  
componentes.

!ADVERTENCIA!

Use las ilustraciones como guía, familiarízate con esta unidad y sus variaciones componentes. Consulte la figura 4. Conociendo la unidad se obtendrá más profundamente, idea útil más prolongada

**Figura 3**



Está etiquetada indicando la distancia entre el mangote trasero de acuerdo a la medida ANSI B175.3

Etiquetas de Seguridad y de Información de Operación: Asegúrese que todas las etiquetas estén libres de daños y legibles. Reemplace inmediatamente etiquetas o fechas que estén desgastadas o deterioradas. Etiquetas nuevas estarán disponibles en su centro de servicio local autorizado de Schneider.

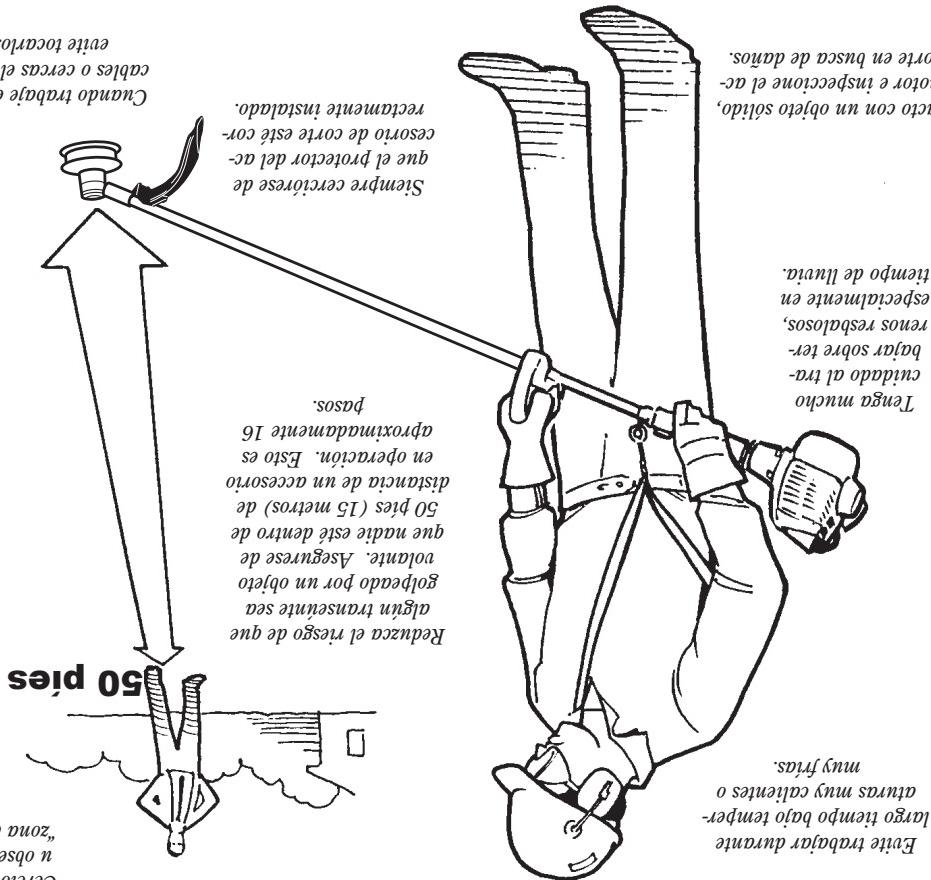
!IMPORTE!

Etiquetas de Seguridad

Figura 2

Este constanteamente alterta de los desfloses y desbordes que pue dan ser lazasados por el acceso de corte o rebaldas.

Cuando trabaje en un terreno rocoso o cerca de cables o cercas eléctricas, use extremo cuidado y evite tocarse con el accesorio de corte en busca de daños.



**Este Alerta del Área de Trabajo**

EL Operario Debidamente Equipado

- SIMEPRE use proteccion para los ojos como escudo contra objetos lanzados.
- NUNCA opere el motor cuando transpore la unidad.
- Interior! Cerciorase que siempre haya buena ventilacion. El humo o gases del escape del motor pueden causar serias lesiones o la muerte.
- SIMEPRE mantienga su area de trabajo libre de basura u objetos que puedan rebotar contra usted o contra transmisiones.
- SIMEPRE use el accesorio de cortefijoado.
- SIMEPRE pade el motor inmediatamente si repentinamente se empieza a vibrar. Inspeccione el accesoario de corte por partes quebradas, fallantes o instaladas incorrectamente.

**¡ADVERTENCIA! Use Buen Juicio**



The diagram shows a hand holding a pencil, writing on a spiral-bound notebook. The page contains the following handwritten text:

Use de la madera  
Mantenega una  
Posicion segura y  
derecha en el  
cuerpo - mantenega  
en balance en todo  
momento durante el  
uso de la madera.

**Traffic on Ciudad**

Podaduras Shimadzu operan a velocidades bajas y pueden causar daños o lesiones严重的as si son mal usadas o abusadas. Nunca permita que una persona sin entrenamiento opera esta unidad!

Nunca instale accesorios no autorizados. No use accesorios no probados por Shindaiwa en esta unidad.

Mantengase Alerta

**Nunca opere ninguna máquina motorizada si estás cansado o si estás bajo la influencia de alcohol, drogas o medicamentos que pudieran alterar tu habilidad y juicio.**

**!ADVERTENCIA!**  
Dismiuyá El Riesgo  
de Incendios.



- SIEMPRE paré el motor y permitir que se enfríe antes de volver a arrancar el tanque.
- SIEMPRE inspeccione la máquina por partes de combustible que estén quemadas, durante cada arranque y limpie cualquier derrame de combustible.
- SIEMPRE: una por péridas de combustible que no se arroje al suelo.
- Nunca coloque materiales inflamables cerca del silenciador de escape.

**NUNCA opere el motor sin la malla  
del guardachispas en su lugar.**

■ NUNCA coloque materiales inflamables cerca del silenciador de la abeja.

■ SIEMPRE aleje la máquina del área de combustible o de otros materiales inflamables antes de arrancar el motor.

**SIEMPRE**: inspeccione la ma-  
quina por perdidas de combustible,  
antes de cada uso. Durante cada  
llenoado, verifique posibles perdidas  
alrededor de la tapa o tanque de  
combustible. Si existen perdidas de  
combustible evidentes, pare inme-  
diatamente el motor. Perdidas de  
combustible deben de ser repara-  
das.

■ SIEMPRE pre el motor y permit  
que se enfríe antes de volver a  
llenar el tanque. Evite sobre lleno  
el tanque y límpie cualquier der-  
reto de aceite que se haya  
derramado.

## Contenido

Introducción	Página
Declaraciones de Seguridad	2
Instrucciones de Seguridad	3
Estructuras de Seguridad	4
Ejigentes de Seguridad	5
Descripción del Producto	5
Especificaciones	5
Comprobable	6
Ajuste de Marcha Mínima	10
Parada del Motor	10
Arranque del Motor	9
Combustible	9
Vehículo de la Condición	11
de la Ubicación	11
Correa de Arneses	11
Mantenimiento	13
Almacenamiento de Largo Plazo	15
Guita Diagnóstico	16
Garantía del Sistema de Emisiones	19



## !ADVERTENCIA!

Las emisiones emitidas por el tubo de escape de este producto contienen sustancias químicas que en el estadio de California son consideradas como causantes de cáncer, defectos congénitos u otros efectos nocivos a la reproducción humana.

Shindaiwa Inc. se reserva el derecho de realizar cambios a sus productos sin previo aviso, y sin la obligación de hacer modificaciones a máquinas fabricadas de acuerdo con las normas establecidas para el uso de la máquina.

La información contenida en este manual describe unidades disponibles a la fecha de su publicación.

Como propietario/operario, usted no debe permitir que Shindaiwa es la tarde en comprobar que Shindaiwa es la clindrada con excepcional alta potencia.

Los motores Shindaiwa representan la tecnología líder de motores de alto rendimiento, de poco peso y pequeño tamaño. Los carídas, comodidad ni durabilidad.

Lea y siga las recomendaciones de este manual del operario.

Un sistema de construcción para suministrar un rendimiento superior sin comprometer calidad, comodidad ni durabilidad.

La podadora Shindaiwa Serie T231 ha sido diseñada y construida para suministrar una calidad, comodidad y durabilidad.

## Introducción

**!IMPORATANTE!**

El propósito de los procedimientos seguras operativas para una operación segura bajo la mayoría de condiciones normas y/o leyes vigentes en su área. Si tiene alguna pregunta relativa a su Serie T231 o si no entiende alguna información contenida en este manual, consulte a su distribuidor Shindaiwa, quien le atenderá con gusto. También puede comunicarse con Shindaiwa Inc. a la dirección que aparece en la contraportada de este manual.

Toda información precedida por la palabra "NOTA" contiene información útil que puede hacer su trabajo más fácil.

### NOTA:

Toda información precedida por la palabra "PRECAUCIÓN" contiene información especial y significante.

### !IMPORATANTE!

Toda información precedida por la palabra "PRECAUCIÓN" contiene información que se debe cumplir para evitar daños mecánicos.

### PRECAUCIÓN!

!ADVERTENCIA! Contiene información que debe cumplir para evitar lesiones.

### !ADVERTENCIA!

Toda información que es de tipo simbólico indica por un símbolo que este operando esta momento para los objetos que están en su mano.



Si esta unidad se usa como una desarrasadora, mantenga sosteniendo el mango por los rebotes del disco.

repetidos y puede que el operador

sean causados por Shindaiwa.

Siempre use una arnés cuando opere

esta unidad con discos/cuchilla. Un

arnés también es recomendado

cuando use cable de nylon.

No opere esta unidad con un

discos/cuchilla al menos que este

aproximadamente por Shindaiwa.

Este uso daña la máquina de mangos.

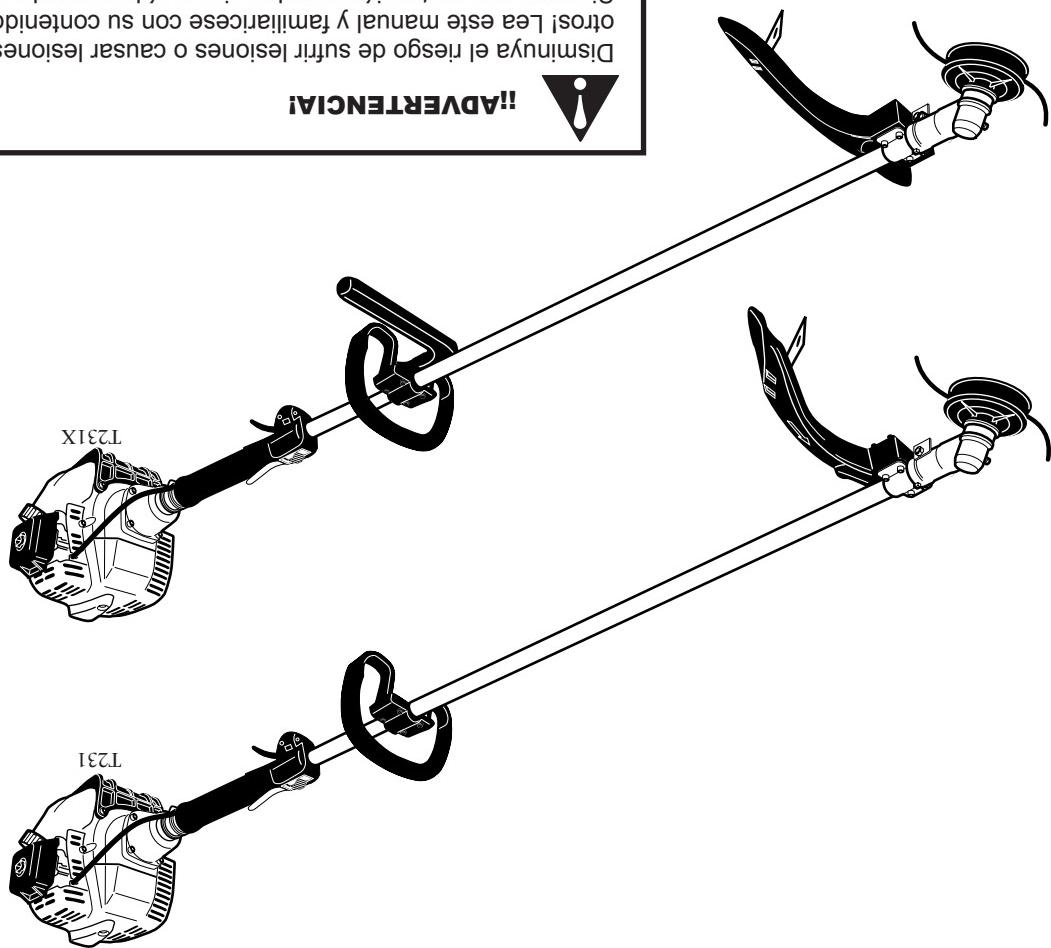
mantenga sosteniendo el mango

entre los rebotes.

# shindaiwa

Siempre use protección para los ojos y oídos cuando opere esta máquina.  
Disminuya el riesgo de sufrir lesiones o causar lesiones a otros! Lea este manual y familiarícese con su contenido.

## !!ADVERTENCIA!



# Podadora T231/EVC Podadora T231X/EVC

Manual Del Propietario/Operador Shindaiwa

